



3, 2(b),  
6

**Ohio Voluntary Action Program (VAP)  
Remedial Action Work Plan**

Canton Drop Forge Property  
4575 Southway Street SW  
Canton, Ohio

**May 2, 2013**

CDF007599



## **Ohio Voluntary Action Program (VAP) Remedial Action Work Plan**

### **Canton Drop Forge Property**

*4575 Southway Street SW  
Canton, Ohio*

**May 2, 2013**

*Prepared For  
Canton Drop Forge, Inc.*

---

Donald A. Fay  
Certified Professional #254

---

David Kreeger, PG  
Project Geologist

---

David McKenzie, PE  
Project Engineer

*TRC Environmental Corp. | Canton Drop Forge  
Draft*

# Table of Contents

---

1.	Introduction.....	1-1
1.1	Property Background.....	1-1
1.1.1	Historic Property Use .....	1-2
1.1.2	Current Property Use.....	1-2
1.1.3	Property Land Use .....	1-3
1.2	Legal Description of the VAP Property.....	1-3
1.3	Eligibility of VAP Property .....	1-3
1.4	Previous Environmental Assessments .....	1-3
1.4.1	VAP Phase I Property Assessment .....	1-4
1.4.2	VAP Phase II Property Assessment .....	1-5
2.	Conceptual Site Model .....	2-1
2.1	Location and Description of Property .....	2-1
2.2	Property Hydrogeology.....	2-1
2.2.1	Regional Hydrogeology .....	2-1
2.2.2	Property-Specific Hydrogeology.....	2-3
2.2.3	Determination of Ground Water Classification .....	2-6
2.3	Summary of Property-Specific Risk.....	2-6
2.3.1	Exposure Assessment .....	2-6
2.3.2	Determination of Applicable Standards.....	2-7
2.3.3	Summary.....	2-8
2.4	Derivation of Preliminary Remediation Goals.....	2-9
2.4.1	Selection of VAP Generic Standards as Cleanup Levels.....	2-9
2.4.2	Derivation of Risk-Based, Site-Specific Preliminary Remediation Goals ....	2-10
2.5	Summary of Chemicals of Concern and Media Above Applicable Standards.....	2-11
2.5.1	Soils above VAP Standards.....	2-11
2.5.2	Pond Bottom Materials above VAP Standards .....	2-11
2.5.3	Pond Water above VAP Standards .....	2-11
2.5.4	Ground Water above UPUS.....	2-12
2.5.5	Protection of Ground Water Meeting UPUS (POGWMUPUS).....	2-12
2.5.6	Soil Vapor .....	2-13
3.	Remedial Objectives .....	3-1
3.1	Project Approach and Remedial Design .....	3-1
3.2	Preliminary Remediation Goals .....	3-2
3.2.1	Soil PRGs .....	3-2

3.2.2	Pond Bottom Materials and Associated Soil PRGs.....	3-2
3.2.3	Ground Water PRGs .....	3-3
3.2.4	Pond Water PRGs.....	3-3
3.3	Summary of Remedial Activities.....	3-4
3.4	Remedial Activities Project Schedule .....	3-5
4.	Interim Measures .....	4-1
5.	Remedial Activities – Institutional Controls.....	5-1
5.1	Environmental Restrictive Covenants .....	5-1
5.2	Other Institutional Controls.....	5-1
6.	Remedial Activities – Supplemental Phase II Sampling Activities.....	6-1
6.1	Direct Push Soil Boring Installation.....	6-2
6.2	Piezometer Well Installation.....	6-2
6.3	Sub-Slab Indoor Air Installations .....	6-2
6.4	Ground Water Potentiometric Surface Investigation and Sampling .....	6-3
7.	Remedial Activities for Soils .....	7-1
7.1	Soil Remediation Description and Rationale.....	7-1
7.2	Soil Remediation – Soil Excavation and Disposal.....	7-1
7.2.1	Permits .....	7-1
7.2.2	Project Safety .....	7-2
7.2.3	Site Security .....	7-2
7.2.4	Waste Characterization.....	7-2
7.2.5	Excavation .....	7-2
7.2.6	Transportation and Disposal .....	7-3
7.2.7	Confirmatory Sampling.....	7-4
7.2.8	Sampling Procedures .....	7-5
7.2.9	Backfilling/Restoration .....	7-5
8.	Remedial Activities for Pond Bottom Materials .....	8-1
8.1	Pond Bottom Material Remediation Description and Rationale .....	8-1
8.2	Free Product and Water Removal .....	8-1
8.3	Pond Bottom Material Excavation and Disposal .....	8-2
8.3.1	Permits .....	8-2
8.3.2	Project Safety .....	8-2
8.3.3	Waste Characterization.....	8-2
8.3.4	Excavation .....	8-3
8.3.5	Transportation and Disposal .....	8-3

8.3.6	Confirmatory Sampling .....	8-4
8.3.7	Sampling Procedures .....	8-5
8.4	Backfilling/Restoration .....	8-6
9.	Remedial Activities for Ground Water .....	9-1
9.1	Ground Water Response Requirements and Rationale .....	9-2
9.2	Ground Water – Ground Water Monitoring .....	9-2
9.2.1	Ground Water Monitoring Program.....	9-2
9.3	Field Variances.....	9-6
10.	Project Contingencies .....	10-1
10.1	Remedial Construction Contingencies .....	10-1
10.1.1	Step-Out Excavations and Reconfirmation Sampling .....	10-1
10.1.2	Dust .....	10-1
10.1.3	Odor.....	10-1
10.1.4	Storm Event and Excavation Flooding .....	10-2
10.1.5	Events Arising from Unforeseen Subsurface Conditions .....	10-2
10.2	Ground Water Compliance .....	10-2
11.	Operation, Maintenance, and Monitoring Plan (OM&M Plan).....	11-1
12.	Public Notice.....	12-1

## List of Tables

Table 1	Summary of Planned Remedial Activities
Table 2	Preliminary Remediation Goals

## List of Figures

Figure 1	Property Location Map
Figure 2	Identified Areas
Figure 3	Summary of Planned Remedial Activities
Figure 4	Pond 1 Remediation Details
Figure 5	Pond 2 Remediation Details

## List of Appendices

Appendix A	Ohio EPA / RCRA MOA Form #16 – Remedial Action Work Plan
Appendix B	Project Schedule
Appendix C	Public Notice

# Section 1

## Introduction

---

TRC Environmental Company (TRC) has completed this Remedial Action Plan (RAP) for the remediation of affected media at the Canton Drop Forge Property, located at 4575 and 4644 Southway Street SE, Canton, Stark County, Ohio (Property) on behalf of the Property owner and Volunteer, Canton Drop Forge, Inc. (CDF). The Property was enrolled on [Date] in the Voluntary Action Plan (VAP) under the Memorandum of Agreement (MOA) track. The VAP site identification is 276-000130-002. Since the date of VAP enrollment, CDF has, through its Certified Professional, Donald Fay of TRC, submitted the following documents to Ohio EPA, with copies to USEPA, Region 5, under the VAP:

- Ohio Voluntary Action Program (VAP) Phase I Property Assessment: Canton Drop Forge Property (Issued on October 26, 2012 and Updated on March 28, 2013);
- Ohio Voluntary Action Program (VAP) Phase II Property Assessment: Canton Drop Forge Property (May 2, 2013 submitted simultaneously with this RAP).

The purpose of this RAP is to report the extant results from site studies of the nature and extent of affected media at the Property and the pathway completeness and potential risk associated with these affected media; an evaluation of remedial alternatives to address the affected media; and the preferred remedies for conducting remedial activities at the CDF property for affected media that fail to meet applicable Ohio VAP standards.

This RAP focuses on areas of the Property that are currently known to require remediation, specifically: two storm water/surface water retention basins (Ponds) known as Pond 1 and Pond 2; and groundwater. Further site characterization is ongoing, and this RAP will be amended if any additional areas require remediation to achieve VAP standards. It is the intent of CDF to conduct the remediation of the Ponds immediately after the Property's existing oil-water separator system is upgraded. The project will be completed during the 2013 construction season (which ends in November for this part of Ohio).

### 1.1 Property Background

The Property is located at 4575 and 4644 Southway Street SW, Canton (Perry Township), Stark County, Ohio (Figure 1). The Property consists of four parcels (Parcel IDs 4300284, 4303265, 4303266, and 4303267) totaling approximately 34.03 acres and includes the main manufacturing parcels on the north side of Southway Street SW and two smaller parcels located on the south side of Southway Street SW (see Figure 2).

**CDF007604**

CDF is the Volunteer and the present owner of the Property. Canton Drop Forge, Inc., formerly known as Canton Drop Forge & Manufacturing Company, took title to the Property in 1951, and forges various metals. The Property history dates back to 1942 as a manufacturer of aircraft parts for the United States Army Air Corps. The Property's current use is considered industrial in nature pursuant to OAC 3745-300-08(B)(2)(C)(iii).

### **1.1.1 Historic Property Use**

Prior to 1942, the main portion of the Property was used for agricultural and/or residential purposes. In 1942, the United States Army Air Corps developed the Property for the manufacturing of aircraft and land-based fighting equipment; the Property was operated by CDF. In 1951, CDF acquired the Property and continued the similar manufacturing operations.

### **1.1.2 Current Property Use**

The Property is currently utilized for the manufacturing of steel forgings. CDF employs approximately 400 individuals in a three shift, 24-hour operation, seven days a week. The primary operations conducted at the Property consist of receiving raw material; cutting, heating, forging, and heat-treating steel; cleaning steel; and inspecting and shipping the finished products.

There are currently twelve buildings located on the Property that are used for manufacturing operations, office space, and equipment storage (Figure 2). The Property also contains dumpsters used for storage of general facility trash, trailers for the storage of final products, cylinder storage areas, pump rooms, a well room, and laboratory testing areas.

The facility uses a high volume of water in its process operations. As a result of the manufacturing process, the process wastewater generally contains oil, water (condensed steam), cooling water, and occasional storm water. The process wastewater flows from catch basins in the vicinity of furnaces and hydraulic hammers within the forge building and flows by gravity to a sub-grade grit chamber and oil-water separator located immediately south of the facility's main forge and furnace shop. During normal operations, oil is recovered from the oil-water separator for recycling. Effluent from the oil-water separator is discharged to the on-Property storm water/process water (pond water) retention basins (Pond 1, Pond 2, and Pond 3) during normal operation conditions. These Ponds also receive storm water from areas on the Property. The existing oil-water separator is unable to reliably retain all of the oil, which has resulted in oil discharges to the ponds, especially during precipitation events.

Some additional process water is generated at the facility's boiler house building. This process water is routed to a steam-oil separator for oil removal, and the condensed hot water is discharged in storm piping to Pond 2.

During significant rainstorm events, the volume of process water and storm water that flows to the existing oil-water separator located south of the forge and furnace shop occasionally exceeds the hydraulic capacity of the separator. When the capacity is exceeded, excess water (with potentially some oil) is discharged by gravity to Pond 1. As described above, the existing oil-water separator is being upgraded to prevent oil discharges in the future.

### **1.1.3 Property Land Use**

The current and projected land use for the Property is commercial/industrial (*i.e.*, restricted) use. CDF will implement an Environmental Restrictive Covenant (ERC) to restrict the property to commercial/industrial land use, as defined in OAC 3745-300-08(C)(2)(c), to ensure the property remains in commercial/industrial land use.

## **1.2 Legal Description of the VAP Property**

A legal description of the Property is presented in Appendix I of the VAP Phase I (TRC, 2013).

## **1.3 Eligibility of VAP Property**

The United States Environmental Protection Agency (USEPA) issued a Notice of Violation (NOV) to CDF on January 22, 2013 specifically in regards to potential Resource Conservation and Recovery Act (RCRA) obligations pertaining to the Property. On February 20, 2013, TRC, on behalf of CDF, submitted a response letter to the U.S. EPA's January 22, 2013 letter. On March 22, 2013, Ohio Environmental Protection Agency (Ohio EPA) issued a letter to CDF indicating that portions of the Property may be ineligible to participate in the VAP at this time (due to the USEPA-issued NOV). A letter from the U.S. EPA, requesting additional information, was received by CDF on April 5, 2013 in response to CDF's February 20, 2013 letter. CDF anticipates that VAP eligibility issues will be satisfactorily resolved prior to submitting a No Further Action (NFA) Letter for the property following proposed corrective action described herein.

## **1.4 Previous Environmental Assessments**

This section summarizes the findings of the VAP-compliant Phase I Property Assessment (VAP Phase I) and Phase II Property Assessment (VAP Phase II) of the CDF Property.

### 1.4.1 VAP Phase I Property Assessment

TRC issued a draft VAP Phase I Property Assessment report for the Property in October 2012 and updated it in March 2013 in accordance with OAC 3745-300-06. The VAP Phase I report identified eight areas within the Property where hazardous substances and/or petroleum products are suspected to have been released and required further evaluation under a VAP Phase II. The locations of the Identified Areas (IA) are shown on Figure 2.

The VAP Phase I identified the following IAs at the Property:

- **IA-1** – The Production Area, which consists of a majority of the buildings on the west side of the Property, hydraulic machinery, transformers and capacitors known or suspected to contain polychlorinated biphenyls (PCBs), aboveground storage tanks (ASTs), and the former septic system area.
- **IA-2** – The Powerhouse, which consists of the Powerhouse, a fly ash pit, adjacent inactive UST farm, and ASTs.
- **IA-3** – The West Storage Yard, which consists of the West Storage Yard, inactive underground storage tank (UST) farm, and an oil-water separator rope skimmer.
- **IA-4** – Closed Landfill Zone A and East Storage Yard, which consists of Closed Landfill Zone A, the East Storage Yard, former bio-cell area, scrap metal storage areas, and a fly ash pit.
- **IA-5** – Closed Landfill Zone B and Pond 3, which consists of Closed Landfill Zone B, all liquids and bottom materials within Pond 3 and surrounding soils.
- **IA-6** – Pond 1, which consists of all liquids and bottom materials within Pond 1 and surrounding soils.
- **IA-7** – Pond 2, which consists of all liquids and bottom materials within Pond 2, surrounding soils, surrounding area of suspected buried drums, and the associated rope skimmer.
- **IA-8** – Site Wide Ground Water.

The VAP Phase I identified the following potential chemicals of concern (COCs) associated with the IAs at the Property:

- **Volatile organic compounds (VOCs)** are included based on the suspected or potential historical releases associated with on-Property petroleum bulk storage operations, on-Property landfiling, bio-cell remediation, on-Property current and historical use of petroleum, and historical operations on site.
- **Semi-volatile organic compounds (SVOCs)** are included based on evidence of historical operations, current and historical petroleum bulk storage and use on

Property, on-Property fly-ash disposal/drying, bio-cell remediation, on-Property landfilling, and on-Property coal aggregate use and storage.

- **Polycyclic Aromatic Hydrocarbons (PAHs)** are a subset of SVOCs indicative of petroleum constituents and are included based on evidence of PAHs detected in SVOC analyses. PAHs are included based on evidences of current and historical petroleum bulk storage and use on Property.
- **Inorganic compounds** are included based on evidence of machining and outdoor scrap metal storage on the Property. The list of inorganic compounds includes the metals arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.
- **Total petroleum hydrocarbons (TPH) gasoline-range organics/diesel-range organics/oil range organics (GRO/DRO/ORO)** are included based on the potential releases associated with petroleum bulk storage and use operations, and historical operations on site.
- **Polychlorinated biphenyls (PCBs)** are included based on historical and current use of transformers, use of used oil, and hydraulic lifts.

#### **1.4.2 VAP Phase II Property Assessment**

Phase II activities were performed by TRC at the Property in accordance with OAC Rule 3745-300-07(F) to evaluate the potential presence of COCs within the IAs and to determine whether applicable standards were met in accordance with the VAP. Specifically, soil, ground water, pond bottom materials, pond water, and soil vapor samples collected were analyzed for a combination of VOCs, SVOCs, PAHs, inorganics, TPH (DRO/ORO and GRO), and PCBs.

The VAP Phase II consisted of the installation of 47 soil borings; 10 monitoring wells; 4 soil gas sample implants; and the collection of 5 pond water samples and 35 soil and pond bottom material samples. Three existing wells from the 1993 Hammontree and R&R Phase II were also sampled, as were two ground water production wells that are in use at the Property. All VAP Phase II sampling was completed during the following time frames: October 8, 2012 through October 19, 2012; October 27, 2012 (October 2012); November 1, 2012; and January 28, 2013 through February 6, 2013 (January and February 2013). Sampling efforts are summarized below and are discussed in detail in the draft Phase II Property Assessment report prepared by TRC.

##### **IA-01: Production Areas**

A total of nine soil samples were collected from IA-01. Laboratory analysis indicated that arsenic, barium, cadmium, chromium, and lead concentrations were detected above the reporting limits in most of the soil samples. Except for

arsenic identified at IA01-B01 (230 mg/kg) collected three to five feet below the ground surface (ft-bgs) exceeding the commercial/industrial land use standard (82 mg/kg), all soil detections are below the VAP single chemical generic direct contact standards for commercial/industrial land use and for construction/excavation activities.

#### ***IA-02: Powerhouse***

Eight soil samples were collected from IA-02 and analyzed for VOCs, SVOCs, TPH (DRO/ORO and GRO), and RCRA metals. PCBs were analyzed from samples collected from near surface intervals. Depth of the soil sample intervals ranged from 2 to 18 ft-bgs. Laboratory analysis identified arsenic, barium, cadmium, chromium, lead, and mercury in soil samples. All soil detections were below the VAP single chemical generic direct contact standards for commercial/industrial land use and for construction/excavation activities.

#### ***IA-03: West Storage Yard and Inactive USTs***

A total of eleven soil samples were collected from IA-03. Soil samples were analyzed for VOCs, SVOCs, TPH (DRO/ORO and GRO), and RCRA metals. Near surface soil samples were submitted for PCB analysis. Depth of the soil samples ranged from 0 to 14 ft-bgs.

Laboratory analyses of these collected soil samples indicated the presence of PAHs, benzene, toluene, and/or xylenes, but at concentrations below the VAP single chemical generic direct contact standards north of UST Farm 1 (IA03-B01), south of UST Farm 1 (IA03/B-02), within the outdoor hydraulic oil and petroleum storage areas (IA03/B-03 and IA03/B-04), and north of the oil-water separator (IA03-B06). Trichloroethene (TCE) was identified at 120 µg/kg from soil collected at 16- to 17-ft-bgs at IA03-B10. Relatively lower concentrations (project and duplicate samples) of TCE were identified at the deeper soil sample collected at IA03-B09. Elevated TPH-ORO concentrations were identified below the oil saturation limit (20,000 mg/kg) at the near surface from samples collected from IA03-B07 (8,300 mg/kg) and IA03-B08 (5,600 mg/kg). In addition, an elevated concentration of TPH-ORO was identified at the deeper IA03-B08 sample (4,500 mg/kg).

Except for arsenic at IA03-B06 (93 mg/kg), all soil detections were below the VAP single chemical generic direct contact standards for commercial/industrial land use and for construction/excavation activities.

#### **IA-04: Closed Landfill Zone A and East Storage Yard**

Seven soil samples were collected from IA-04. Soil samples were collected from IA04-B01 through IA04-B06 and analyzed for VOCs, SVOCs, TPH (DRO/ORO and GRO), and RCRA metals. In addition, near surface soil samples were submitted for PCB analysis. Benzo(a)pyrene at IA04-B01 exceeds the commercial/industrial use direct contact standard (7,700 µg/kg), but not the preliminary remedial goal (PRG). See Section 3.2. Intermittent and relatively lower detections of PAHs, VOCs, TPH (DRO/ORO, GRO), metals and PCBs were identified below commercial/industrial and excavation/construction use direct contact standards or saturation levels in other soil samples collected within IA-04.

#### **IA-05: Closed Landfill Zone B and Pond 3**

A total of seven soil samples were collected from IA-05. Soil samples collected from IA05-B01 through IA05-B04 were analyzed for VOCs, SVOCs, TPH (DRO/ORO and GRO), and RCRA metals. PCBs were analyzed from samples collected from the near surface. VOCs (except acetone), GRO, and PCBs were not detected above the laboratory-reporting limits in soil samples submitted for laboratory analysis. Varying concentrations of TPH below the applicable standard were identified in soil samples submitted within the IA for analysis with the greatest concentration identified from the near surface sample collected from IA05-B02.

Two pond bottom material samples (IA05-SS01 and IA05-SS02) underlying Pond 3 waters were submitted for VOCs, SVOCs, TPH (DRO/ORO and GRO), metals, and PCBs analysis. All detections were below the VAP single chemical generic direct contact standards for commercial/industrial land use and for construction/excavation activities. PAHs, TPH, arsenic, barium, chromium, lead, and selenium were detected above laboratory reporting limits within IA-06 with the highest concentrations identified in bottom material located on the southern boundary of the pond (IA05-SS02), which is the furthest point from the outfall.

Two pond water samples from Pond 3 were submitted for VOCs, SVOCs, RCRA metals and PCBs analysis. Pond water samples were collected at similar locations where bottom material samples were collected. Arsenic was identified above Ohio VAP Unrestricted Potable Use Standard (UPUS) (10 µg/L) at IA05-SW01 (58 µg/L) and at IA05-SW02 (32 µg/L). All other pond water detections were below the UPUS. Arsenic, mercury, and selenium were

detected in both samples at similar concentrations above laboratory reporting limits within IA-05. Concentrations of VOCs, SVOCs, and PCBs were not identified above the laboratory reporting limits.

#### **IA-06: Pond 1**

One bottom material sample (IA06-SS01) was collected from IA-06. The sample was analyzed for VOCs, SVOCs, TPH (DRO/ORO and GRO), 8 RCRA metals, and PCBs. All detections were below the VAP single chemical generic direct contact standards for commercial/industrial land use, and for construction/excavation activities. PAHs, TPH, arsenic, barium, chromium, and lead were detected above laboratory reporting limits within the pond bottom material sample. Acetone was the only identified VOC above laboratory reporting limits.

Six bottom material samples (IA06-SS02 to IA06-SS07) were collected from IA-06. The samples were analyzed for VOCs, SVOCs, TPH (DRO/ORO and GRO), RCRA metals, and PCBs. PAHs, TPH, arsenic, barium, chromium, and lead were detected above laboratory reporting limits. All PAH concentrations were below the VAP single chemical generic direct contact standards for commercial/industrial land use, and for construction/excavation activities. Elevated concentrations of TPH were identified in all bottom material samples. Concentrations of TPH-ORO from samples collected at IA06-SS02 (160,000 mg/kg), IA06-SS05 (23,000 mg/kg) and IA06-SS06 (31,000 mg/kg) exceeded the TPH-ORO saturation limit (20,000 mg/kg). No concentrations of TPH identified in the clay liner or native material exceeded the criterion.

One pond water sample (IA06-SW01) was collected from IA-06 and analyzed for VOCs, SVOCs, RCRA metals, and PCBs. The pond water sample was collected at a similar location where the initial bottom material sample was collected. The location is illustrated on Figure 6-2 of the Phase II report. Arsenic was detected above UPUS (10 µg/L) in IA06-SW01 (11 µg/L). Acetone, cis-1,2-dichloroethene, and TCE were detected above laboratory reporting limits, but below UPUS, within the pond water sample. Additional concentrations of other VOCs, metals, and SVOCs were not identified above laboratory reporting limits. PCBs were not identified in the sampled pond water.

#### **IA-07: Pond 2**

Four soil samples were submitted for VOCs, SVOCs, TPH (DRO/ORO and GRO), and RCRA metals from two soil borings, IA07-B01, IA07-B02 and from one stratigraphic bore, STRAT-05. Near surface soil samples from each location were also collected for PCB analysis. Elevated ORO concentrations were identified at near surface and deeper soil samples collected at IA07-B01. Laboratory results from a near surface sample collected at the soil boring advanced immediately north of Pond 2 and south of reported buried oil drums (IA07-B01) identified concentrations of PAHs, specifically benzo(a)pyrene (9,700 µg/kg), above the commercial/industrial use direct contact standard (7,700 µg/kg). In addition, TPH concentrations were detected in samples from near-surface soils at STRAT-05 (DRO: 8,400 mg/kg; ORO: 77,000 mg/kg) and in a deeper sample from IA07-B01 (6,400 mg/kg), of which only the near surface sample was identified above the ORO saturation limit. Concentrations of PCBs were detected below criterion in near surface samples collected from IA07-B01 (330 µg/kg) and STRAT-05 (140 µg/kg). VOCs, except acetone and 2-butanone, were not detected above the laboratory reporting limits in soil samples submitted for laboratory analysis.

Seven additional soil borings (IA07-B03 through IA07-B08, and IA08-MW10) were advanced around Pond 2 to delineate elevated PAHs and TPH identified within samples collected in the immediate vicinity of Pond 2 (IA07-B01 and STRAT-05), and to address data gaps to the west, north, and east. At least two samples were collected from each soil boring; one from a relatively shallow sample interval and one from a subsequent deeper sample interval. Due to observed field conditions, four samples were submitted from IA07-B06 located east of Pond 2. Samples were submitted for PAH and TPH-DRO analysis. PAHs were not detected above the commercial/industrial, or excavation/construction use direct contact standards. A concentration of TPH-ORO in the shallow soil sample (2-4 ft-bgs) collected at IA07-B07 (31,000 mg/kg) exceeded the saturation limit. In addition, one soil sample collected from IA08-MW10 (69,000 mg/kg) at a deeper interval exceeded the saturation limit.

Three trenches (Trench-01 through Trench-03) were advanced into the southeast, south, and west Pond 2 side slopes above the mean pond water level. The purpose of the trenches was to determine the depth of petroleum impacts in the sidewalls of the pond. Two samples were collected from each trench; one at the slope and a second from the terminus of the trench from the slope surface. Soil samples were submitted for PAH and TPH-DRO/ORO analysis.

Detected PAHs were all below the commercial/industrial or excavation/construction use direct contact standards. Concentrations of ORO TPH at the slope surface at Trench-01 (53,000 mg/kg) exceeded saturation limits. Other slope surface samples and terminus samples had ORO TPH detections (540 mg/kg to 15,000 mg/kg), but these detections were below the saturation limits.

Two pond bottom material samples (IA07-SS01 and IA07-SS02) underlying Pond 2 waters were submitted for VOCs, SVOCs, TPH (DRO/ORO and GRO), RCRA metals, and PCBs analysis. Except for the TPH-ORO concentrations (240,000 mg/kg and 27,000 mg/kg) that exceed the saturation limit (20,000 mg/kg), all bottom material detections were below the VAP criterion. PAHs detected within IA-07 had the highest concentrations identified in pond bottom material located on the eastern quadrant of the pond (IA07-SS02), which is the furthest point from the outfall and adjacent to the Pond 3 egress. A concentration of DRO (18,000 mg/kg) was identified in IA07-SS01 above the saturation limits.

Six additional bottom material sample locations (IA07-SS03 to IA07-SS08) were collected from Pond 2 at relatively deeper depths (below the pond water level) than those collected at IA07-SS01 and IA07-SS02. Benzo(a)pyrene from IA07-SS04 exceeded applicable standards; see Section 3.2. Elevated concentrations of TPH were identified in the samples; however, only IA07-SS03 exceeded the saturation limit for DRO and ORO (10,000 µg/kg and 20,000 µg/kg) at 14,000 mg/kg and 91,000 mg/kg, respectively. The sample collected from IA07-SS04 exceeded the ORO saturation limit at 32,000 mg/kg. Except for IA07-SS03 where DRO concentrations decreased with depth, all concentrations of TPH increased with depth. In addition, relatively low concentrations of VOCs, GRO and PCBs were identified, generally below the laboratory reporting limit.

Two pond water samples were submitted for VOCs, SVOCs, RCRA metals and PCBs analysis. The two pond water locations within IA-07 include: one located at the outfall and one located at the egress to Pond 3. Pond water sampling locations are shown on Figure 6-2 of the VAP Phase II Report. Arsenic concentrations at IA07-SW01 (32 µg/L) and at IA07-SW02 (25 µg/L) exceeded UPUS. Selenium, bis (2-ethylhexyl) phthalate, and acetone were also detected above laboratory reporting limits within the pond water samples, but at concentrations below UPUS. Concentrations of other VOCs and metals were

not identified above laboratory reporting limits. PCBs and other SVOCs were not identified in the sampled pond water samples.

#### **IA-08: Site-Wide Property Ground Water**

Eight ground water monitoring wells were installed on the Property in October 2012 and were initially sampled on October 16 and 18, 2012. In addition, three monitoring wells installed by R&R (RRMW) in 1993 were first inspected and evaluated for continued use, and then re-developed and sampled by TRC. The initial round of ground water samples were analyzed for VOCs, SVOCs, RCRA metals, and PCBs. The metals analyses consisted of both unfiltered and filtered samples.

The eleven monitoring wells (MW-01 through MW-08, RRMW-01, RRMW-02, and RRMW-04) are located to assess ground water quality within IA-08. The monitoring wells are screened in the uppermost ground water zone identified beneath the Property in unconsolidated materials (Uppermost Saturated Zone).

The October 2012 ground water samples had the following VOCs detected above laboratory reporting limits: carbon disulfide, bromodichloromethane, chloroform, cis-1,2-dichloroethene, and TCE. The TCE concentration at RRMW-02 (10 µg/L) exceeded the Ohio VAP UPUS (5 µg/L). No other VOCs were detected above the UPUS. Confirmation sampling of RRMW-02 identified TCE above UPUS (7.9 µg/L)). No other VOCs were detected above the laboratory reporting limits.

All SVOC-detected concentrations were below UPUS during the October 2012 sampling.

Concentrations of arsenic, chromium, and lead were detected above laboratory detection limits in the unfiltered ground water samples submitted for analysis in October 2012. The concentration of total (unfiltered) arsenic at MW-02 (16 µg/L) exceeded UPUS (10 µg/L). MW-06 and RRMW-01 were sampled for dissolved metals during the October 2012 sampling event. Only arsenic (140 µg/L) and lead (21 µg/L) exceeded UPUS (10 µg/L and 15 µg/L, respectively). No other concentrations of total metals were detected above UPUS. During the second (*i.e.*, confirmation) sampling event (November 1, 2012), all samples for metals analysis were collected as total metals (unfiltered) utilizing low flow ground water sampling procedures. The confirmation sampling at MW-02 identified the arsenic concentration at UPUS (10 µg/L). No other total metals were detected above UPUS.

In accordance with the Ohio VAP, ground water with COCs exceeding UPUS was confirmed with supplemental sampling on November 1, 2012. In summary, TCE was identified at RRMW-02 at 7.9 µg/L and confirmed to be above the UPUS.

From January 28, 2013 through February 2, 2013 monitoring wells MW-01 through MW-08, RRMW-02, and RRMW-04 were resampled for VOC, SVOC, PCB and total RCRA metal analysis. Monitoring well RRMW-01 was not sampled due to no ground water within the monitoring well. In addition, two new monitoring wells (MW-09 and MW-10) were constructed north of the Forge Shop Canteen and north of Pond 2, respectively, to determine if the identified environmental media impacts identified at IA-03, IA-06 and IA-07 have the potential to impact the on-Property production wells. Monitoring wells MW-09 and MW-10 were constructed similarly to the October 2012 monitoring wells, developed on February 4, 2013 and sampled for VOC, SVOC, PCB, and total (unfiltered) RCRA metal analysis on February 5, 2013.

The January and February 2013 ground water samples contained the following VOCs at concentrations above laboratory detection limits: acetone, benzene, cis-1,2-dichloroethene and TCE. TCE at MW-08 (22 µg/L), which was not detected during the October 2012 sampling, exceeded the Ohio VAP UPUS. No other concentrations of VOCs were detected above the UPUS, including TCE at RRMW-02 (4.1 µg/L). Other TCE detections occurred at MW-07 (0.45 J µg/L), MW-09 (0.80 J µg/L), and RRMW-04 (0.61 J µg/L), and each were below UPUS. Acetone was identified at MW-01 (1.1 J µg/L), MW-02 (1.3 J µg/L), MW-03 (1.1 J µg/L), MW-04 (1.3 µg/L), MW-05 (1.9 J µg/L), MW-09 (1.2 J µg/L) and MW-10 (1.4 J µg/L). Benzene was only detected at RRMW-04 at 0.13 J µg/L. Cis-1,2-dichloroethene was detected at MW-08 (1.8 µg/L), MW-09 (1.6 µg/L), RRMW-02 (1.5 µg/L) and RRMW-04 (1.2 µg/L).

Concentrations of arsenic, barium, chromium, and lead were detected in the unfiltered ground water samples submitted for analysis in January and February 2013. The concentration of total arsenic at MW-02 (13 µg/L) and MW-06 (11 µg/L) exceeded the UPUS. All other total arsenic detections were below the laboratory reporting limit. Total chromium detection at MW-07 (110 µg/L) exceeded the UPUS (100 µg/L). No other concentrations of total metals were detected above UPUS. Total chromium was identified above the laboratory reporting limit at MW-08 (5.5 µg/L). Barium was identified below the UPUS (2,000 µg/L) at MW-09 (1,000 µg/L) and at MW-10 (380 µg/L). No other total metals were detected above the laboratory reporting limits.

**Soil-Vapor Sampling**

Four soil vapor soil gas implants (SGIs) were installed within IA-03 on January 29, 2013 and were sampled on February 12, 2013 for VOCs by U.S. EPA Compendium Method TO-15. Soil vapor samples were collected from two locations at two separate depths, 10 ft-bgs and 20 ft-bgs. The two soil vapor locations within IA-03 include: one located adjacent to MW-09 north of the Forge Shop Canteen, and one adjacent to the UST Farm in the Western Yard.

VOCs detected above laboratory reporting limits include: 1,1,1-trichloroethane, acetone, benzene, carbon disulfide, chloroform, cis-1,2-dichloroethene, dichlorodifluoromethane, n-hexane, m- and p-xylenes, o-xylene, toluene, trans-1,2-dichloroethene, TCE and trichlorofluoromethane.

Chloroform, acrolein, and TCE were detected at concentration above their respective Screening Level (SL) for industrial use as follows:

Analyte: Soil-Gas SL (Industrial):	Acrolein 0.088 µg/m³	Chloroform 5.3 µg/m³	Trichloroethene 8.8 µg/m³
SG01 (10 ft-bgs)	ND	28	2,600
SG01 (20 ft-bgs)	ND	24	1,400
SG02 (10 ft-bgs)	0.88 J	0.48 J	31
SG02 (20 ft-bgs)	ND	27	2,100

ND = Not Detected  
Bold = Exceeds Screening Level (SL)

## Section 2

# Conceptual Site Model

---

This Section summarizes and discusses the findings of the VAP Phase I, VAP Phase II, and Risk Assessment and presents the data and information used to select the preferred Remedial Activities for the Property. Details of the Phase II sampling and risk assessment are provided in the draft Phase II Property Assessment report prepared by TRC.

### 2.1 Location and Description of Property

The Property is located at 4575 & 4644 Southway Street SW, Canton (Perry Township), Stark County, Ohio, 44706 (Figure 1). The Property consists of four parcels, totaling approximately 34.03 acres (Parcel IDs 4300284, 4303265, 4303266 and 4303267). The VAP Property includes the main CDF manufacturing parcel on the north side of Southway Street SW, and two relatively smaller parcels located on the south side of Southway Street SW (Figure 2).

### 2.2 Property Hydrogeology

#### 2.2.1 Regional Hydrogeology

The Property is located in the Appalachian Basin, which consists of sedimentary depositional formations eroded from the Appalachian orogeny and deltaic sediments from the Canadian highlands. The regional geology of the Property is dominated by unconsolidated sandy Wisconsinan-age (24,000 to 14,000 years before the present) glacial deposits overlying a sequence of Pennsylvanian-age shales, sandstones and conglomerates.

#### *Regional Physiography and Drainage*

The regional area including the Property is located within the Glaciated Allegheny Plateaus section of the Appalachian Plateaus physiographic province. The end moraine and retreat of glacial ice sheets has produced a hummocky area between two converging glacial lobes dominated by glacial deposits like terraces, eskers, kettles, kettle lakes and bogs/fens. This part of the Glaciated Allegheny Plateaus section is considered the Appalachian Highlands Major Division. The general slope of the topography is 1,090 feet at the northern Property boundary to 1,050 feet at the southern boundary above mean sea level (MSL).

### ***Regional Glacial and Peripheral Glacial Deposits***

The glacial deposits in northeast Ohio include till (unsorted mixture of clay, silt, sand, and gravel), outwash (primarily sand and gravel), and lacustrine deposits (alternating well-sorted silt and clay layers of lake origin). Till is deposited by glaciers, outwash by glacial melt water and associated streams, and lacustrine deposits by glacier-dammed waters resulting in temporary lakes. Glacial and peripheral glacial materials provide significant variation in the permeability of sequential intervals depending on the composition and thickness of the deposits. Commonly, the materials beneath any one location may show an alternating and/or repeating sequence of several types of deposits with dominance by high or low permeability deposits in different intervals.

Glacial deposits at the Property are dominated by high permeability outwash deposits with varying amounts of localized lacustrine deposits from the Wisconsin age.

### ***Regional Pennsylvanian Bedrock***

In general, the Massillon Sandstone with interfingering shales is the uppermost bedrock beneath the vicinity of the Property and is from the Pennsylvanian Period. The general thickness of the formation is 20 to 45 feet. It is light gray in color, has fine to coarse quartz grains, and is generally well sorted. The mean dip-direction is towards the north-northeast. The Massillon Sandstone typically has unconformities and zones of cut-and-fill indicating a high-energy depositional environment like a beach (Gray 1956). Based on the presence of overlying glacial unconsolidated sediments, it is probable that uppermost portions of the Massillon Sandstone were eroded during the Wisconsin advancement until the first more competent layer of interfingering shale was encountered. In addition, the first encountered shale identified in ODNR well logs has been described as soft. Therefore, there is a potential for the bedrock to be fractured near the glacial sediment and bedrock interface, potentially allowing a relatively significant amount of ground water flow in the bedrock aquifer.

A Sharon Conglomerate unconformity is present in Stark County. Therefore, the Massillon Sandstone is potentially underlain with the Sharon Conglomerate. This deposit consists of a thick medium-grained, bed of primarily quartz, sandstone. Cross-bedding, presence of conglomerate belts of imbricated structures, silica rich grains (quartz) and secondary growth of

quartz indicate that the grains were eroded from an igneous source, followed by a first sedimentation, eroded and deposited at least a second time in a delta paleoenvironment prior to lithification as the Sharon Conglomerate. Underlying the Sharon Conglomerate is most likely a Mississippian period limestone.

### ***Regional Hydrology***

According to the Ohio Department of Natural Resources (ODNR), Division of Soil and Water Resources, *Ground Water Resources of Stark County Map* (Walker, 1988), the Property is located in an area in which yields of more than 500 gallons per minute are known to occur from buried valley glacial sediments. Ground water also occurs in the underlying bedrock, but at lower yields.

Available aquifer-test data from the Stark County Pollution Potential Report (Williams, 1991) show that hydraulic conductivity typically range from 300 to 2,000 gallons per day (gpd) per square foot (ft<sup>2</sup>) in the buried valleys. This contrasts with typical values of 100 to 300 gpd/ft<sup>2</sup> in lower yielding Pennsylvanian bedrock (*i.e.*, Massillon Sandstone and Sharon Conglomerate) and 1 to 100 gpd/ft<sup>2</sup> in lower yielding Pennsylvanian bedrock (*i.e.*, shale). Other glacial materials vary in hydrogeologic characteristics depending on the predominance of materials in the unit.

### **2.2.2 Property-Specific Hydrogeology**

There is no natural offsite surface gradient at the Property. Three man-made storm water/process water retention basins (hereafter "Ponds") are present on the Property; one on the west portion of the Property (Pond 1), one centrally located on the Property (Pond 2), and one on the eastern portion of the Property (Pond 3). Storm water discharges to the Pond system. Pond 1 and Pond 2 discharge to Pond 3, where water infiltrates and evaporates. There are no outfalls or discharges off-Property from the Ponds. Storm water entering storm drains within the employee and visitor parking lots discharge to a storm water ditch north of Southway Street SW. The ditch discharges to a relatively topographically-low area adjacent to the Property and south of Pond 2.

### ***Unconsolidated Deposits***

The subsurface unconsolidated deposits as determined by soil borings at the Property are consistent with the regional geology and hydrogeology.

Borings indicate that the subsurface materials beneath the Property consist of a fill layer, underlying topsoil horizons or gravel, six to twelve feet in thickness below the ground surface. The fill layer consists of slag, sand, and gravel with varying amounts of silt with occasional red and yellow brickbats. The underlying sandy silts and clays appear to be originally glacial drift sediments. These near surface materials appear to have been reworked during site grading.

The fill material and glacial drift sediments are underlain by glacial outwash sediments that are poorly sorted, subangular to well-rounded, and consist of fine to coarse sands and gravels with varying amounts of cobble and silt to at least 89 ft-bgs. Inconsistent silty clay layers at varying depths and thicknesses, indicative of glacial lacustrine deposits, lie within the outwash glacial deposits. In addition, a well sorted, well-rounded fine to medium sand is present underlying the property at varying depths between 34 ft-bgs and 50 ft-bgs. The sand layer is identified at varying thicknesses less than 2.5-feet thick and is an indicator, when present, of the Upper Saturated Zone capillary fringe. The soil then changes back to outwash glacial deposits that are moist to saturated. The depth to the uppermost ground water is approximately 35- to 69 ft-bgs. The soils within the Uppermost Saturated Zone consists of outwash glacial deposits as described with a similar fine to medium sized sand layer between 65 ft-bgs and 75 ft-bgs.

### ***Site Hydrology***

#### ***Uppermost Saturated Zone***

Ground water is encountered in the outwash glacial sediments consisting of fine to coarse sand and gravel layer with varying amounts of cobble and silt. The outwash glacial sediments define the Uppermost Saturated Zone beneath the Property. Ground water is encountered at depths of 35 to 69 ft-bgs. However, the potentiometric surface is between 32 and 53 ft-bgs. The variation in depth is attributed to the surface elevation of the monitoring wells installed on the Property and presence of intermittent layers of less permeable clayey lacustrine sediments. No continuous silt or clay deposits are apparent beneath or within the zone of saturation that indicates a potential underlying confining layer.

Depth to water measurements in the Uppermost Saturated Zone during the Phase II investigation show that ground water elevations in the Upper

Saturated Zone ranged between 1024.50 and 1030.16 feet above the mean sea level (feet-MSL). Various interpretations of flow directions indicate a relatively flat ground water gradient towards the north that is influenced by the on-Property production wells screened in the Pennsylvanian bedrock aquifer; however, two supplemental monitoring wells constructed in February, 2013 identify a ground water recharge area (MW-09) within the western yard of the Property. The recharge area radially slopes downgradient toward RRMW-04 to the northeast, MW-07 to the north, MW-08 to the west, and RRMW-02 to the south-southwest. The recharge area appears to be isolated at the near surface within the western yard (IA-03). It is suspected that the recharge area is influenced by storm water entering roof drains that are not connected to a storm sewer and is not indicative of the natural ground water gradient (north-northeast). The February 15, 2013 ground water potentiometric surface elevations at property monitoring wells were confirmed on March 5, 2013.

#### **Lower Saturated Zone**

The Lower Saturated Zone at the Property is the bedrock aquifer beneath the glacial outwash sediments. Due to the on-Property production well's influence on the monitoring wells, it appears that the glacial outwash aquifer, in which the monitoring wells are installed, and the Pennsylvanian bedrock are hydrogeologically connected. Therefore, there appear to be no aquitards within the unconsolidated stratigraphy or the bedrock lithology capable of limiting the downward migration of groundwater within the glacial outwash aquifer into the underlying Pennsylvanian bedrock aquifer. Near surface ground water in this region typically mirrors the ground surface gradient, which in this case is towards the south. However, ground water underlying the Property flows towards the north. Referenced documents identify the most likely bedrock to be encountered at the Property to be the Massillon Sandstone with interfingering shale, which has a dip towards the north-northeast. Therefore, it appears that the ground water gradient is influenced by the Massillon Sandstone dip. This is further supported that pre-glaciated river valleys in the region flowed to the north prior to the Wisconsinian advancement, which buried the river valleys much like the buried river valley underlying the Property.

### 2.2.3 Determination of Ground Water Classification

The ground water within the unconsolidated aquifer at the Property is present in a very permeable sand and gravel glacial outwash deposit formation. CDF has reported that they can withdraw ground water from the production wells with yields greater than 100-gallons per minute (gpm) for approximately 24-hrs. Furthermore, according to the ODNR, Division of Soil and Water Resources, *Ground Water Resources of Stark County Map* (Walker, 1988), the Property is located within a buried valley that can sustain yields of more than 500 gpm.

Additionally, TRC evaluated the classification of the Upper Saturated Zone by monitoring the water levels within the monitoring wells during the pumping of the Lower Saturated Zone (Pennsylvanian bedrock aquifer) utilizing the two on-Property production wells. During the draw of ground water from the production wells, adjacent monitoring wells had a measurable drop indicating connectivity between the bedrock and unconsolidated aquifers. Therefore, the two units are considered one aquifer for classification purposes.

These results support the determination that the Uppermost Saturated Zone beneath the Property is considered Critical Resource in accordance with OAC 3745-300-10 because of its ability to yield ground water at a time-weighted average pumping rate greater than 100 gpm over a 24-hour period. The yield tests were not performed during a period of anticipated maximum yield, however, seasonal decreases are not expected to lower the yield below the Class A threshold of 100 gpm.

## 2.3 Summary of Property-Specific Risk

CDF conducted a VAP-compliant Risk Assessment (RA) for the Property as a component of the VAP Phase II property assessment. The RA was completed in accordance with OAC 3745-300-07 and OAC 3745-300-09. The objective of the RA is to appropriately characterize the potential exposures and incremental risks to human receptors posed by current or past site-related activities. Remedial action decision making will incorporate the results of the RA in conjunction with facility-specific applicable or relevant and appropriate requirements (ARAR) and/or risk-based preliminary remediation goals (PRGs).

### 2.3.1 Exposure Assessment

The exposure assessment identifies the receptor populations(s) and exposure pathways of potential concern. As discussed in Section 4.0 of the VAP Phase II, the receptor populations and exposure pathways are summarized as follows:

RECEPTOR	PATHWAY
Commercial/Industrial Workers and Visitors	▪ Direct contact ( <i>i.e.</i> , ingestion and dermal contact) with soil;
	▪ Inhalation of contaminants suspended as dust or volatilized from the soil; and
	▪ Inhalation of contaminants via vapor intrusion from ground water and/or soil to indoor air.
Construction/Excavation Workers	▪ Direct contact ( <i>i.e.</i> , ingestion and dermal contact) with soil (surface and subsurface soil); and
	▪ Inhalation of contaminants suspended as dust or volatilized from the soil.
Outdoor Maintenance Worker	▪ Direct contact ( <i>i.e.</i> , incidental ingestion and dermal contact) with soil, pond bottom material, and pond water; and
	▪ Inhalation of contaminants suspended as dust or volatilized from the soil and pond bottom materials.
Off-Site Residents	▪ Inhalation of contaminants via vapor intrusion from ground water to indoor air.

Direct contact exposure pathways for current and intended future land use are consistent with the Support Document for Generic Numerical Standards (Ohio EPA 2008) and OAC 3745-300-08(B)(2)(c) for Commercial/Industrial Workers and Construction/Excavation Workers. Therefore, the Generic Numeric Direct Contact Standards for soil are applicable for the on-site Commercial/Industrial Workers, and the on-site Construction/Excavation Workers.

### 2.3.2 Determination of Applicable Standards

The purpose of the VAP Phase II is to conduct a sufficient investigation to determine whether applicable standards are met in all IAs and affected media, or to determine whether remedial activities conducted in accordance with OAC Rule 3745-300-15 at the Property are necessary to achieve applicable standards. The investigation results discussed in the VAP Phase II and summarized above identify specific COCs for each IA and each media investigated to determine whether there may be potential impact to the Property related to site activities requiring further evaluation. To comply with applicable standards all points of compliance at the Property must be met for each environmental medium and complete exposure pathway. The complete exposure pathways with respect to environmental media are as follows:

- Direct contact with soil;
- Use of ground water;

- Exposures to pond water and pond bottom material; and
- Exposure to indoor inhalation risks via migration of VOCs from below grade into overlying buildings.

### 2.3.3 Summary

Based on the VAP Phase II investigation, representative concentrations of COCs at the Property were compared with the applicable standards for soil, pond bottom materials, pond water, and ground water presented in detail in the VAP Phase II report. COCs across all applicable media, across all pathways, and for each receptor population were included in the evaluation to determine whether a cumulative Excess Lifetime Cancer Risk (ELCR) of 1E-05 and/or a cumulative Hazard Index (HI) of 1 are met, and therefore, meet applicable standards or identify the need for further remedy. Complete results of this evaluation are provided in Appendix VII of the VAP Phase II; a summary of the results are provided below.

RECEPTOR	HI <sup>1</sup>	ELCR <sup>2</sup>
On-Site Commercial / Industrial Worker (range across all IAs)	0.1 to 1	3E-06 to 1E-05
On-Site Construction / Excavation Worker (range across all IAs)	0.08 to 0.3	5E-08 to 4E-06
On-Site Outdoor Maintenance Worker (range across all IAs)	0.1 to 1	3E-06 to 1E-05
Off-Site Residents	0.3	2E-06

<sup>1</sup> Cumulative Hazard Index (HI) across all complete pathways must be ≤ 1.

<sup>2</sup> Cumulative Excess Lifetime Cancer Risk (ELCR) across all complete pathways must be ≤ 1E-05.

As shown, cumulative ELCR values and HI meet applicable standards across all pathways and for all receptors. The conclusions from the VAP Phase II investigation findings, risk assessment, and identification of potential data gaps are summarized below.

- Light Non-Aqueous Phase Liquid (LNAPL) and elevated concentrations of TPH, specifically oil and diesel range organics, exceed soil saturation limits in the soil and pond bottom materials at Pond 1 and Pond 2.
- Evaluation of potential risks associated with the vapor intrusion pathway indicated that this pathway cannot be eliminated. Therefore, further evaluation using site-specific information is warranted to determine whether applicable standards are met.
- Ground water exceeds UPUS for TCE at RRMW-02 and MW-08, which are located southwest of Pond 1 and centrally located along the western Property boundary,

respectively. Therefore, additional evaluation is warranted to identify an on-Property or off-Property source and determine extent.

## 2.4 Derivation of Preliminary Remediation Goals

Supplemental information as summarized above is needed to complete site characterization and provide sufficient information to determine appropriate remedy, if any, as necessary, and to demonstrate that all applicable standards have been achieved or will be achieved following remedy. This Remedial Action Plan will be amended if this additional information changes the remedies that are needed to achieve applicable standards in all media for the purpose of a NFA Letter.

Based on current information, the anticipated remedies will include:

1. An institutional control restricting the Property to commercial or industrial use;
2. An institutional control / OM&M Agreement that includes semi-annual monitoring of ground water sentinel wells (*i.e.*, MW-09 and MW-10) and the two production wells to demonstrate that COCs are not impacting the production water wells above UPUS; and
3. Removal of oil-impacted soil and pond bottom materials in the vicinity of Pond 1 and Pond 2 that exceed TPH saturation limits.

Item 3 above will be implemented concurrently with addressing data gaps (*e.g.*, further characterization of TCE). The pond remediation will not occur until after the oil-water separator upgrade described above is complete and confirmed to be effective at preventing future oil discharges to the Ponds.

### 2.4.1 Selection of VAP Generic Standards as Cleanup Levels

The current and anticipated future use is considered a commercial/industrial land use category per VAP Rule 3745-300-08, and the exposure pathways considered under the commercial/industrial land use category include: dermal contact with soil, inhalation of vapors and particles from soil, and ingestion of soil. It is reasonable to assume that any anticipated construction activities would be limited to activities such as maintenance of utilities. Consequently, it is unlikely that the 10-foot point of compliance would be breached. Therefore, Generic Direct Contact Standards for Commercial/Industrial Workers and Excavation/Construction Workers (whichever is lower) is the cleanup level for soil (see Table 2).

As presented in the VAP Phase II, all concentrations are at or below direct contact standards for the commercial/industrial worker, the construction worker, and the outdoor maintenance worker. In summary, all concentrations are below direct contact

standards for soil, including cumulative effects due to the presence of multiple chemicals. However, concentrations of TPH (*i.e.*, diesel and oil range organics) exceeded soil saturation limits in samples (primarily pond bottom material samples) collected in IA-06 and IA-07 indicating the presence of free product or light non-aqueous phase liquid (LNAPL).

#### **2.4.2 Derivation of Risk-Based, Site-Specific Preliminary Remediation Goals**

Although evaluation of exposures for the industrial/commercial worker is protective for the outdoor maintenance worker, the potential exists for outdoor maintenance workers (*e.g.*, grounds keeping activities, seasonal exposure, restricted access areas, landscaping, repair work, general maintenance activities) to be exposed to COCs from media not routinely, or only intermittently available for the daily or industrial/commercial worker. Specifically, potential exposure to pond bottom materials and pond water would only occur during activities related to the work performed in the ponds (*i.e.*, IA-06 and IA-07). Pond bottom materials are generally covered by pond water and therefore, not available for exposure. If, on the limited occasion bottom material is brought to the surface, direct contact standards for the Industrial/Commercial Worker would be protective of the outdoor maintenance worker.

However, limited direct contact exposure to pond water is considered a complete pathway for the outdoor maintenance worker and was evaluated for IA-06 and IA-07. Since the exposure pathways for the outdoor maintenance worker are not listed in the *Support Document for Generic Standards* or in Paragraph (B)(2)(c) of OAC 3745-300-08, a property-specific risk assessment based on limited exposure for this receptor was required, and risk-based standards for arsenic and PAHs in pond water were calculated in accordance with OAC 3745-300-09 for the outdoor maintenance worker. These standards are presented on Table 2 as PRGs.

As noted above, pond bottom materials are generally covered by pond water and therefore, not available for exposure. If on the limited occasion bottom material is brought to the surface, direct contact standards for the Industrial/Commercial Worker would be protective of the outdoor maintenance worker. However, PRGs for pond bottom material and soil protective of the risk-based standards in pond water noted above were developed using soil-water partition equation in accordance with U.S. EPA Soil Screening Guidance (U.S. EPA 2002). These PRGs are presented in Table 2.

## 2.5 Summary of Chemicals of Concern and Media Above Applicable Standards

The following sections discuss potential COCs and identification of media present above applicable VAP Standards (*i.e.*, VAP generic criteria) or the risk-based PRGs.

### 2.5.1 Soils above VAP Standards

Based on the current and anticipated future commercial/industrial land use and potential receptor populations present at the property (*e.g.*, industrial worker, the construction worker, and the outdoor maintenance worker) the following COC is present above VAP standards:

- TPH-ORO present in soils immediately adjacent to IA-07 (*i.e.*, Pond 2) at saturation.

### 2.5.2 Pond Bottom Materials above VAP Standards

Based on the current and anticipated future commercial/industrial land use and potential receptor populations present at the property (*e.g.*, the outdoor maintenance worker) the following COCs are present above applicable VAP standards:

- TPH-ORO above saturation levels at IA-06 (*i.e.*, Pond 1); and
- TPH-DRO and TPH-ORO above saturation levels at IA-07 (*i.e.*, Pond 2).

Arsenic is considered a potential COC due to elevated concentrations (above UPUS) identified in the pond water; however, the drinking water pathway to the pond water is not complete and the arsenic concentrations do not exceed site specific PRG for arsenic in pond water; see Section 3.2. Due to elevated concentrations of TPH, associated constituents (*i.e.*, PAHs) are also considered potential COCs. These COCs include acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene. Concentrations were evaluated against PRGs protective of pond water in the pond bottom materials.

### 2.5.3 Pond Water above VAP Standards

Other than the presence of free-phase oil on the surface of the Ponds, COCs in pond water currently meet applicable standards (*i.e.*, risk-based PRGs); however, several chemicals are retained as COCs in pond water in order to remain protective of the outdoor facility worker

Arsenic is considered a potential COC due to elevated concentrations (above UPUS) identified in the pond water; however, the drinking water pathway to the pond water is

not complete and the arsenic concentrations do not exceed site specific PRG for arsenic in pond water; see Section 3.2. Due to the presence of free-phase oil on pond water, constituents associated with oils / TPH (*i.e.*, PAHs) are also considered potential COCs

#### **2.5.4 Ground Water above UPUS**

The Property currently meets UPUS at the applicable Point of Compliance (POC) [*i.e.*, the downgradient (northern) Property boundary and the Production Well intake]; however, the following COCs are present in ground water underlying the Property above UPUS:

- arsenic present above UPUS at MW-06 (October 2012 and January 2013);
- arsenic and lead present above UPUS at MW-02 (January 2013);
- TCE present above UPUS at RRMW-02 (October 2012 and November 2012); and
- TCE present above UPUS at MW-08 (January 2013).

Specific sources of the TCE in RRMW-02 and MW-08, arsenic in MW-02 and MW-06, and lead in MW-06 have not been identified. Wells MW-02 and MW-06 were re-sampled (November 1, 2012) to confirm concentrations of arsenic and lead are at or below UPUS.

After the installation of MW-09, it was determined that RRMW-02 may or may not be downgradient of IA-03 and Pond 1 due to suspected artificial recharge from storm water sewers. Due to the relatively steep ground water gradient and artificial recharge within IA-03 and IA-06 compared to the majority of the Property and soil vapor and soil detections within the western storage yard (IA-03), it cannot be reliably determined whether the TCE is attributable to an on-Property source near inactive UST Farm 1 and/or the forge shop, or to an off-Property source located southwest of the Property. Ground water flow and quality will be further evaluated during the TCE source investigation described in Section 6, and this RAP will be amended if appropriate based on the results.

#### **2.5.5 Protection of Ground Water Meeting UPUS (POGWMUPUS)**

The Lower Saturated Zone (bedrock aquifer) is assumed to meet UPUS based on the lack of COC detections in the on-Property production wells. The weight-of-evidence discussion provided in the VAP Phase II demonstrates that the Lower Saturated Zone will continue to meet UPUS in the future.

### 2.5.6 Soil Vapor

Although quantified risk values show acceptable risks, further evaluation of the vapor intrusion pathway is warranted. Specifically, CDF will determine if TCE in soil and groundwater at IA-01 (Production Area), IA-02 (Powerhouse), and IA-03 (West Storage Yard and inactive USTs) is volatilizing and migrating to nearby buildings and affecting the quality of the air within the buildings.

A discussion of the Supplemental Phase II activities is presented in Section 6. This RAP will be amended if appropriate based on the results of the TCE source investigation.

## Section 3

# Remedial Objectives

---

### 3.1 Project Approach and Remedial Design

The purpose of the selected Remedial Design and this RAP is to implement remedial activities and remedies such that the CDF property will meet VAP standards at each applicable Point of Compliance.

Potential COCs and specific COCs present in media above the applicable VAP standards and PRGs for the following IAs include:

- IA-6 - Pond 1
  - Free-phase used oil present on the pond water; and
  - TPH-ORO present in pond bottom materials above the VAP saturation standards (see Table 2);
- IA-7 - Pond 2
  - Free-phase used oil present on the pond water;
  - TPH-ORO, TPH-DRO; present in pond bottom materials above the VAP saturation standards (see Table 2);
  - Arsenic; Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, 2-Methylnaphthalene, Naphthalene, Phenanthrene, and Pyrene are potential COCs in pond bottom materials due their potential to leach to pond water;
  - TPH-ORO present in soils in contact with the oil-saturated bottom materials at Pond 2 at concentrations above the saturation standards (see Table 2).
- IA-8 – Site Wide Ground Water
  - TCE and arsenic is present in ground water underlying the Property at concentrations above UPUS (see Table 2); and
  - Ground water meets standards at the POC.

In addition, there exists a potential that COC concentrations are present in soils above VAP standards at limited locations, as described in Section 8 of the VAP Phase II report. CDF has identified that additional Phase II sampling is required in IA-03 (West Storage Yard and

Inactive USTs) due to the presence of detected concentrations of TCE and to ensure that soils meet applicable VAP criteria, specifically for the vapor intrusion pathway. If the additional Phase II sampling demonstrates that additional remedial measures are required, then CDF will prepare an addendum to this RAP that specifies those additional measures. Therefore, the remainder of this RAP focuses on the remedies that are currently known to be required for the liquids and pond bottom materials for Ponds 1 and 2 (including adjacent soil), and for ground water. A discussion of the Supplemental Phase II activities is presented in Section 6.

### **3.2 Preliminary Remediation Goals**

CDF has derived risk-based, site-specific PRGs for pond bottom material and associated soil protective of risk-based standards in pond water for each COC discussed above. PRGs and their applicable POC(s) are presented in Table 2 and discussed below.

#### **3.2.1 Soil PRGs**

The applicable soil PRGs are the generic direct contact standards for the commercial/industrial worker scenario and the excavation worker scenario, as presented in OAC 3745-300-08. Soil PRGs for the site-specific COCs are presented in Table 2.

The soil cleanup levels are designed to protect the facility worker from direct contact with soil and to protect the current or future construction/excavation worker from direct contact with soils when performing work in the subsurface (*e.g.*, buried utility line repairs).

Potential removal of soils with COCs present above VAP generic direct contact standards will meet VAP standards by removing the affected soils, and thereby preventing the commercial/industrial worker and construction/excavator scenarios from having contact with soils that do not meet VAP standards. The POC for soils are the Property Boundary and within the zone of 0 to 10 ft-bgs.

#### **3.2.2 Pond Bottom Materials and Associated Soil PRGs**

The applicable cleanup goals for the pond bottom materials and associated soil are the risk-based, site-specific PRGs that were derived in the Human Health Risk Assessment. Pond bottom material PRGs for the site-specific COCs are presented in Table 2.

The pond bottom material PRGs are designed for the protection of pond waters that come into contact with pond bottom material (*i.e.*, leaching to pond waters). The pond bottom material PRGs are, therefore, based on protection of the outdoor maintenance worker's potential exposure to pond water.

Removal of pond bottom material above the site specific, risk-based PRGs will meet VAP standards for both the industrial/commercial worker and outdoor maintenance worker by:

- Removal of affected pond bottom material to prevent the industrial/commercial worker and outdoor maintenance worker from having contact with environmental media that do not meet VAP standards; and
- Removal of oil-saturated pond bottom materials to prevent any residual TPH from leaching to the pond waters and forming a measurable (0.01 foot) immiscible layer of oil on the Pond water.

### **3.2.3 Ground Water PRGs**

The applicable ground water PRGs are the generic UPUS for ground water, as presented in OAC 3745-300-08. Ground water cleanup levels for the site-specific COCs are presented in Table 2.

The POC for ground water are:

- Property boundary; and
- The intake of the production wells.

While several COCs are present above UPUS at locations within the Property, ground water meets UPUS at the applicable POCs. Therefore, ground water at the Property meets VAP requirements for ground water and satisfies the Ground Water Response Requirements required in OAC 4745-300-10.

CDF will ensure that ground water will continue to meet VAP standards for ground water by performing semi-annual ground water sampling of the two production wells and also a sentinel well network that is installed to monitor ground water at and upgradient of the production wells as an early warning system. The proposed Ground Water Monitoring Program is summarized in Section 9. A copy of the final Ground Water Monitoring Program will be included with the subsequent Operation Maintenance and Monitoring Plan (OM&M Plan) for the Property.

### **3.2.4 Pond Water PRGs**

The applicable cleanup levels for pond water are the risk-based, site-specific PRGs for the pond water that were derived in the Human Health Risk Assessment. The pond water PRGs are presented in Table 2.

The pond water PRGs are designed to ensure that oil is not present as a measurable (0.01 feet) immiscible fluid layer in the pond water and for the protection of the outdoor maintenance worker from contact with the pond water within Pond 1 and Pond 2.

Removal and disposal of residual used oil from the surface of Pond 1 and Pond 2 and subsequent remediation of the affected pond bottom material will restore the ponds such that the resulting pond waters meet VAP standards for the receptor population.

The POC for the pond water is the water present in the pond/retention structures identified as Pond 1 (IA-6) and Pond 2 (IA-7). As described above, the remediation of the ponds will not occur until the oil-water separator upgrade is completed and confirmed to be effective at preventing future oil discharges to the ponds.

### 3.3 Summary of Remedial Activities

Planned remedial activities and affected media at the Property are summarized in Table 1 and discussed in detail in the following sections. To achieve the project remedial objectives, CDF will implement the following elements of the selected remedy:

- Implement activity and (land) use limitations (AULs), pursuant to Ohio's Uniform Environmental Covenant Act (UECA) (*i.e.*, Institutional Controls), via an ERC to:
  - restrict the Property to Commercial / Industrial land use as defined in OAC 3745-300-08(C)(2)(c).
- Implement source area remedy for IA-6 (Pond 1):
  - remove free-phase used oil from the pond water surface;
  - excavate and dispose at an off-site approved disposal facility all oil-impacted pond bottom materials with COC concentrations above site-specific cleanup criteria (*i.e.*, PRGs);
  - excavate and dispose at an off-site approved disposal facility all residual, oil-impacted soils adjacent to and/or in contact with pond bottom materials with COC concentrations above site-specific cleanup criteria (*i.e.*, PRGs); and
  - Restore and re-line the base of Pond 1 such that pond water is protected.
- Implement source area remedy for IA-7 (Pond 2):
  - remove free-phase used oil from the pond water surface;
  - excavate and dispose at an off-site approved disposal facility all affected pond bottom materials with COC concentrations above site-specific cleanup criteria (*i.e.*, PRGs);

- excavate and dispose at an off-site approved disposal facility all residual, oil-impacted soils adjacent to and/or in contact with pond bottom materials with COC concentrations above site-specific cleanup criteria (*i.e.*, PRGs); and
- Restore and re-line the base of Pond 2 such that pond water is protected.
- Implement ground water monitoring for IA-8 (Site Wide Ground Water):
  - Currently, ground water underlying the site meets UPUS at the applicable POC. CDF will implement semi-annual ground water monitoring at the production wells and upgradient of the production wells (*e.g.*, at MW-09 and MW-10) to ensure that ground water continues to meet standards at the property boundaries and at the production well intakes.

### 3.4 Remedial Activities Project Schedule

The schedule for implementing the proposed Remedial Activities is presented in Appendix B. As shown, CDF intends to implement the pond remedies immediately after upgrading the Property's oil/water separation systems, and to complete the work during the 2013 construction season. All remedial activities will be completed prior to the issuance of an NFA for the Property.

## Section 4

### Interim Measures

---

Currently, the affected media present at the VAP property does not present an uncontrolled, immediate threat to human health and the environment. Therefore, Interim Measures are not warranted at this time, except for periodic removal of oil from the ponds that has been conducted by CDF. CDF will submit the proposed remedies for public comment and regulatory approval once the regulatory jurisdiction over the remediation is determined.

## Section 5

# Remedial Activities – Institutional Controls

---

This section presents the institutional control(s) and remedial activities that CDF will undertake to ensure that the Property will meet VAP standards and/or PRGs.

### 5.1 Environmental Restrictive Covenants

CDF will implement AULs, pursuant to Ohio's UECA, to restrict the property to Commercial / Industrial land use (*i.e.*, Industrial Use), as defined in OAC 3745-300-08(C)(2)(c).

This AUL will be memorialized in an ERC, in accordance with OAC 3745-300-07(I)(1) and OAC 3745-300-07(I)(3), that the Ohio VAP Certified Professional (CP) will include with the NFA Letter and request for Covenant Not-to Sue (CNS) for the Property.

The Commercial/Industrial Use restriction will serve to ensure the protection of human health for applicable receptors.

### 5.2 Other Institutional Controls

CDF will implement the following other institutional controls:

- Bi-annual (*i.e.*, semi-annual) sampling of sentinel wells (IA08-MW08 and IA08-MW09), RRMW-01, MW-07, RRMW-04, MW-06, and the two production wells to ensure that COCs remain below UPUS at the point of compliance. The ground water monitoring requirements, as well as response requirements if standards are exceeded, will be outlined in an OM&M Plan that is subject to an OM&M Agreement between the Volunteer and Ohio EPA.

## Section 6

# Remedial Activities – Supplemental Phase II Sampling Activities

---

The VAP Phase II identified TCE above SLs in soil vapor, but below applicable VAP direct contact standards within IA-03 (Western Yard). Ground water samples collected from nearby Property boundary wells (RRMW-02 and IA08-MW-08) have contained TCE at concentrations above UPUS in at least one ground water monitoring event.

Due to an isolated and inconclusive ground water gradient at MW-09, an on- or off-Property source for the TCE has not been identified. Additional Phase II sampling is needed to confirm that the regional hydrologic gradient is reliably to the north-northeast and if the property meets the applicable standards for TCE across multiple media. This RAP and the VAP Phase II will be amended once this supplemental information is obtained, as applicable, for the purpose of an NFA Letter.

The conclusions from the Phase II investigation findings and identification of potential data gaps include the following.

- Evaluation of potential risks associated with the vapor intrusion pathway indicates that this pathway cannot be eliminated. Therefore, further evaluation assuming site-specific information is warranted to determine whether applicable standards are met.
- Ground water exceeds UPUS for TCE at RRMW-02 and IA08-MW-08, which are located southwest of Pond 1 and centrally located along the western Property boundary, respectively. Therefore, additional evaluation is warranted to identify an on-Property or off-Property source and to determine extent.

The TCE soil and soil-vapor data indicate that sampling is required to determine if an on-Property source of TCE is present, which may migrate into indoor air or leach to ground water at concentrations above the UPUS. Considering that the underlying driver of the IA08-MW-09 ground water recharge area has not been conclusively identified, the supplemental Phase II activities will include the evaluation of a suspected artificial ground water mounding feature (e.g., storm drains) in IA-03 and installation of a piezometer well between IA08-MW-09 and IA08-MW-08.

CDF will further characterize concentrations of TCE in environmental media, based on available information collected as part of the VAP Phase II Property Assessment; and in accordance with OAC 3745-300-07; and in support of a subsequent VAP NFA Letter for the Property. The

supplemental VAP Phase II TCE source investigation tasks are described in the following sub-sections.

## 6.1 Direct Push Soil Boring Installation

CDF will:

- Advance up to 7 (seven) conventional dual tube, direct push (*i.e.*, Geoprobe 7730DT, or similar) soil borings down to a maximum depth of approximately 20 ft-bgs in the Western Yard to the south and west of previous soil boring IA03-B02.

The actual number and depths may vary based on field observations and conditions. The work will take place outside in portions of gravel areas and no boring locations are planned indoors. Each boring will have a minimum of two samples collected for VOC analysis.

## 6.2 Piezometer Well Installation

CDF will:

- Install one piezometer well using direct-push drilling methodologies to a depth of approximately 60 ft-bgs at a location between existing monitoring wells IA08-MW08 and IA08-MW09.

The boring at this location will be advanced 10-feet into the saturated zone (first encountered at 35 to 40 ft-bgs) to an approximate total depth of 50 ft-bgs. The piezometer well will be constructed using a 15-foot long, 1-inch diameter 0.010-inch slot polyvinyl chloride (PVC) screen, a flush-threaded schedule 40 PVC riser pipe, #5 filter sandpack to approximately 2-feet above the screen, followed by a minimum of 2-feet of bentonite chips (hydrated). The remaining space will be grouted with cement/bentonite grout to approximately 0.5 ft-bgs. A steel protective riser with steel protective cover will be installed with a two feet by two feet concrete pad. The piezometer well location will be protected by four concrete bollards. The top of casing elevation will be surveyed and water elevation measurements will be taken in all monitoring wells so that a refined ground water flow map can be generated.

## 6.3 Sub-Slab Indoor Air Installations

CDF will:

- Install a total of three sub slab vapor sampling points within buildings.

The sub-slab sampling points will be installed in the first floor concrete slab by first drilling an approximately one-inch diameter hole into the floor utilizing a hammer drill to a depth approximately 2-inches below the floor surface. A smaller diameter hole will then be drilled

through the remainder of the slab and approximately two to three inches into the sub-slab material. This inner hole will create an open cavity into which an air sampling probe can be inserted. The sampling point will be completed flush with the surrounding concrete and contained by a recessed brass plug. Bee's wax or hydrated bentonite will be placed in the annulus of the probe and concrete to seal and prevent the surface atmosphere and the sub-slab gas from mixing. A quick drying Portland cement will be used to secure the recessed probe in place. The cement will be allowed to cure overnight prior to sampling.

#### **6.4 Ground Water Potentiometric Surface Investigation and Sampling**

Monitoring wells RRMW-02, IA08-MW08, and IA-08-MW09 will be sampled for VOCs. CDF will also review potential sources for the ground water mounding, such as broken water or sewer lines. A full-round of ground water sampling from all monitoring and production wells will be performed.

Supplemental information as summarized above is needed to complete site characterization and provide sufficient information to determine if additional remedy is needed to demonstrate that all applicable standards have been achieved or will be achieved following remedy. This RAP and the VAP Phase II will be amended once this supplemental information is obtained, as applicable, for the purpose of an NFA Letter.

## Section 7

# Remedial Activities for Soils

---

This section presents the general approach to remediating the lateral and vertical extent of contaminated soil above remediation goals at the Property, focusing on the excavation and handling of the soils and other activities in support of the remedial implementation, including but not limited to permitting, health and safety, site security, and erosion controls.

### 7.1 Soil Remediation Description and Rationale

Currently, soil underlying the Property exceeds VAP standards and PRGs:

- TPH-ORO is present above the saturation limit in the soils adjacent to the pond at IA-07 (Pond 2).

The affected soils occur at locations in contact with or immediately adjacent to free-phased product on the Pond surface, and at or immediately adjacent to oil-saturated pond material handling activities (*e.g.*, oil-water rope skimming) occurring at Pond 2. Due to their proximity to and direct contact with these soils, pond bottom materials that are encountered during remediation activities will be excavated and disposed according to the methodologies for the pond bottom materials, as presented in Section 8.

### 7.2 Soil Remediation – Soil Excavation and Disposal

Phase II activities at the property have determined that additional soil vapor, ground water, and/or soil sampling is required for a relatively small portion of IA-1. The data collected to date suggests that any remedial activities, if required, will focus on small, isolated “hot-spots” of affected soil that can be readily addressed by excavation and disposal. Soils related to hot-spot remediation, if encountered, will be excavated using the methodologies described in the following sub-sections.

#### 7.2.1 Permits

It is expected that the following permits will be required for excavation operations:

- National Emission Standards for Hazardous Air Pollutants (NESHAPS) notification to the Stark County Department of Environmental Services (*i.e.*, the local air pollution control agency); and
- A Notice of Intent (NOI) for coverage under Ohio EPA General Permit for Construction Activities, and a Storm Water Pollution Prevention Plan (SWPPP) will

be in place and adhered to prior to commencing with any excavation and/or construction activities.

#### **7.2.2 Project Safety**

Soil handling, remediation, and excavation will be conducted by qualified, HAZWOPER- trained personnel. The selected contractor will prepare a Health and Safety Plan (HASP) that will address the identification of hazards, hazard mitigation, safe work practices and emergency response procedures related to remediation/ excavation activities for the project. The site-specific HASP will be prepared to comply with 29 CFR 1910.120 and State of Ohio requirements. To prevent exposure to contaminated materials, site personnel will use direct read monitoring equipment [e.g., photoionization detector (PID)] and previous analytical data to identify potentially unsafe exposure levels. Regular site safety inspections will be performed and documented to ensure safety precautions are followed and regulatory requirements are met.

#### **7.2.3 Site Security**

Site security will be maintained during remediation work. Access to the site will be restricted to authorized persons and vehicles by utilizing the existing facility fencing to the maximum extent possible. Additional temporary fencing will be installed if it is deemed necessary to restrict access to specific construction areas.

A security log will be maintained during remedial construction activities. The log will include the date, name, company, and time in and time out of visitors entering the designated construction zones.

#### **7.2.4 Waste Characterization**

Prior to initiation of remedial work, waste soils will be characterized in a manner acceptable to potential disposal facilities. Such characterization may require collection of additional analytical data. Such data will be obtained by CDF's representative and transmitted to the disposal facility as soon as practicable. If the disposal facility requires demonstration that soils are non-hazardous, such demonstration shall be performed to the satisfaction of the disposal facility.

#### **7.2.5 Excavation**

Affected soils in direct contact with pond bottom materials that are encountered during remediation activities will be excavated and disposed according to the methodologies

for the pond bottom materials (Section 8). Soils related to hot-spot remediation, if encountered, will be excavated using the following methodologies:

- A Construction Representative (CR) for CDF will be on-site continuously to direct and monitor excavation and staging activities and to observe the nature of the material being excavated.
- Soils will be loaded directly into roll-off boxes to the extent practicable for off-site disposal. Alternatively, soils may be excavated, loaded into an articulated dump truck, and hauled to a designated staging area adjacent to the remediation area for dewatering. Material that is staged will be stockpiled on plastic sheeting until loaded into licensed dump trucks for off-site disposal. Soils are expected to be unsaturated; if encountered saturated soils will be stabilized onsite using appropriate methods such as Geotube® dewatering technology and chemical conditioning to achieve acceptable moisture content for disposal.
- Excavation areas deeper than four feet will be benched, shored, or sloped (at a minimum slope of 45 degrees) to provide appropriate slope stability protection in accordance with Occupational Safety and Health Act of 1970 (OSHA) regulations. If needed, a ramp leading into the excavation will be sloped at a maximum of 15 degrees to allow for safe equipment access.
- Excavated soils will be field-screened using visual observations and PID readings to monitor progress of material removal. Excavation activities will be suspended once all field screenings indicate that soils containing concentrations of COCs above PRGs have been removed. The lateral and vertical extent of the excavation will be surveyed and recorded prior to restoration.
- Confirmation soil sampling and potential excavation step-outs and sampling contingency procedures are described in Sections 7.2.7 and 10.1.1, respectively, of this document. Backfilling and restoration, as described in Section 7.2.9, will not be completed until soil sampling/analysis has confirmed that remedial objectives have been achieved.
- If the nature of the materials encountered changes significantly from the anticipated condition observed during previous investigations, such materials will be segregated and isolated/covered until additional characterization can be performed to ensure that the material is being handled appropriately.

#### **7.2.6 Transportation and Disposal**

Prior to the commencement of work, the Contractor shall designate the location of the intended landfill for disposal of the waste materials. The selected landfill will be properly licensed to accept the waste, and CDF must approve use of the facility before shipment of material. Previous sampling results, including TCLP analyses prior to and

during the VAP Phase II activities, indicate that the impacted soil can be disposed as non-hazardous special waste.

Material removed from the site will be hauled by licensed trucks in accordance with applicable federal, state, and local rules and regulations in effect for the transportation of soil. Trucks will remain in non-impacted areas during all stages of the work and the transportation contractor will be required to keep the wheels and exterior portions of the trucks free of excessive dirt and debris while on public roadways. Each loaded truck will be covered to reduce the potential of material blowing onto the roadways. If excessive dirt and/or debris are deposited on the roadways as a direct result of the Contractor's operations, the Contractor will be responsible for cleaning the affected areas of the streets in a timely manner.

All material removed from the site will be manifested, with CDF identified as the generator of the waste. Manifests for each truckload leaving the site will be provided in the documentation report.

Each driver will be required to have the manifest signed at the disposal facility to document both the disposal of the load and the quantity of material disposed. The completed manifest(s) will be retained by the CR.

#### **7.2.7 Confirmatory Sampling**

At the completion of each excavation activity, soil samples will be collected to document that the full extent of necessary excavation has been completed. Samples will be collected from the sidewalls and base of the excavation. Sidewall samples will be collected at the mid-height of the targeted wall; however, locations will also be "biased" toward areas that most likely still exceed remedial objectives based on visual observations and field screening readings.

Confirmation samples will be submitted to a VAP certified laboratory for expedited turnaround time. Backfilling and restoration, as described in Section 7.2.9, will not be completed until soil sampling/analysis has confirmed that remedial objectives have been achieved. Sample analysis will be expedited in order to limit the length of time between excavation and restoration.

Sampled excavation surface that does not meet the remedial objective (*i.e.*, lab data exceeds the remedial objectives previously defined) will be addressed per the outlined project contingencies described in Section 10.1.1 and will include additional excavation at the direction of the CR.

### 7.2.8 Sampling Procedures

Samples will be collected from exposed soil surfaces by hand or with a stainless steel trowel (for portions of the excavation that are safely accessible by personnel) or by using the excavator bucket to obtain samples from surfaces proximal to potentially unstable areas. Trowels will be decontaminated between sample sets. Care will be taken to obtain bucket samples from materials that have not touched the bucket surface. The sampler will wear nitrile gloves changed between samples to prevent possible cross-contamination.

Samples will be sealed in an appropriate glass sample jar for the required analysis, placed on ice, preserved as applicable, and delivered to a VAP-certified laboratory for analysis. Each sample will be assigned a unique identification number. Each sample jar will be labeled with the identification number, sampling date, sampling time, and project name. Samples will be transported to a VAP-certified laboratory using chain-of-custody controls and analyzed for the project COCs for soil.

VAP sampling protocols require the development of a quality assurance/control plan, and references data quality objectives that are consistent with those as outlined in USEPA Guidance for Superfund Sites. For this project, an equipment blank, field blank, and blind duplicate will be collected and submitted with each 20 confirmatory samples submitted for laboratory analysis, as applicable. Waste characterization samples do not require VAP certification or Quality Assurance/Quality Control (QA/QC) sampling.

### 7.2.9 Backfilling/Restoration

Once confirmatory analytical data is received to document the achievement of remedial objectives for a given area, and the lateral extent of the excavation is fully documented, the excavated areas will be backfilled to an elevation consistent with the surrounding grades. The clean fill material will be imported from a commercial or documented clean source pre-approved by CDF. Material shall be free of all deleterious materials including, but not limited to organics, waste, debris, or other foreign or man-made objects. CDF will submit representative samples of the fill materials to a VAP certified laboratory to ensure the fill material meets or exceeds the site-specific requirements specified in this RAP or VAP commercial/industrial standards if site-specific standards have not been specified.

Backfilling of each area will be performed after a given area achieves applicable standards (*i.e.*, none of the post-remedial samples containing chemicals of concern in excess of the remedial objectives). Backfilling will be performed by placing clean fill

material in eight to ten inch lifts which will be compacted to 98 percent of the maximum dry density as determined in accordance with American Society for Testing and Materials (ASTM) standard method D698.

After completion of backfilling, the surface shall be restored to a condition comparable to pre-excavation. If precipitation enters the excavation either during remediation or prior to backfilling that requires pumping to complete the work, then it will be either containerized for offsite disposal or managed through the upgraded oil-water separator system

## Section 8

# Remedial Activities for Pond Bottom Materials

This section presents the general approach to remediating the impacted pond bottom materials at the Property, focusing on the excavation and handling of the oil-saturated bottom materials at Ponds 1 and 2 and other activities in support of the remedial implementation, including, but not limited to permitting, health and safety, site security, and erosion controls. Pond bottom materials excavation covers the removal of pond bottom material from Ponds 1 and 2 (*i.e.*, Pond 1 clay layer and Pond 2 underlying native soil).

### 8.1 Pond Bottom Material Remediation Description and Rationale

COCs in pond bottom material within IA-06 and IA-07 are as follows:

- TPH-ORO due to presence above the saturation limit in the pond bottom material at IA-06 (Pond 1); and
- TPH-DRO and TPH-ORO are identified above saturation limits at pond bottom materials in IA-07 (Pond 2).
- Arsenic due to concentration in pond water above UPUS,
- PAHs in pond water [*i.e.*, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene] due to potential leaching from pond bottom materials.

CDF will implement the following corrective measures to ensure pond bottom materials will meet VAP Standards:

- Institutional Controls, as described in Section 5; and
- Excavation and disposal, as described below in Section 8.3.

### 8.2 Free Product and Water Removal

Prior to pond bottom material remediation, residual oil, if any, within Pond 1 and Pond 2 will be removed, managed, and transported for offsite recycling and/or disposal. Once the oil is removed to the maximum extent practical, the water from the ponds will be either pumped to tanker trucks for offsite disposal, or treated in the Property's upgraded oil-water separator system (or to an oil-water separator temporarily installed during the construction period) for discharge to whichever of Pond 1 or Pond 2 is not undergoing remedy at that time.

### 8.3 Pond Bottom Material Excavation and Disposal

Remedial pond bottom material excavation areas are summarized in Table 1 and displayed on Figure 3. Approximately 7,700 cubic yards of affected pond bottom material will be removed from Pond 1 and Pond 2. Excavated areas in Pond 1 will be backfilled to pre-excavation grades with approved imported clean clay fill. Pond 1 remediation details are presented on Figure 4. Excavated areas in Pond 2 will be backfilled with an approximate 6-inch layer of bentonite encapsulated aggregate material (AquaBlok® or equivalent). Pond 2 remediation details are presented on Figure 5.

#### 8.3.1 Permits

It is expected that the following permits will be required for excavation operations:

- NESHAPS notification to the Stark County Department of Environmental Services (*i.e.*, the local air pollution control agency); and
- A NOI for coverage under Ohio EPA General Permit for Construction Activities, and a SWPPP will be in place and adhered to prior to commencing with any excavation and/or construction activities.

#### 8.3.2 Project Safety

Pond bottom material handling, remediation, and excavation will be conducted by qualified, Hazardous Waste Operations and Emergency Response (HAZWOPER)-trained personnel. The selected contractor will prepare a HASP that will address the identification of hazards, hazard mitigation, safe work practices and emergency response procedures related to remediation/excavation activities for the project. The site-specific HASP will be prepared to comply with 29 CFR 1910.120 and State of Ohio requirements. To prevent exposure to contaminated materials, site personal will use direct read monitoring equipment (*e.g.*, PID), and previous analytical data to identify potentially unsafe exposure levels. Regular site safety inspections will be performed and documented to ensure safety precautions are followed and regulatory requirements are met.

#### 8.3.3 Waste Characterization

Prior to initiation of remedial work, the pond bottom material will be characterized in a manner acceptable to potential disposal facilities. Such characterization may require collection of additional analytical data. Such data will be obtained by CDF's representative and transmitted to the disposal facility as soon as practicable. If the disposal facility requires demonstration that the pond bottom material is non-

hazardous, such demonstration shall be performed to the satisfaction of the disposal facility.

#### **8.3.4 Excavation**

Pond bottom material in Ponds 1 and 2 will be excavated using standard excavation techniques or using hydraulic dredging methods, based on the material composition encountered. Pond bottom materials will be stabilized onsite using appropriate methods such as Geotube® dewatering technology and chemical conditioning to achieve acceptable moisture content for disposal. Stabilizing activities will either occur within the Pond or upon plastic sheeting immediately adjacent to the remediation area. Material that is staged and stabilized will ultimately be loaded into licensed dump trucks for off-site disposal. Extracted water will be pumped through a series of separator to remove particulates and contaminants. A Construction Representative (CR) for CDF will be on-site continuously to direct and monitor excavation and staging activities, and observe the nature of the material being excavated and dewatered.

Excavated pond bottom material will be field-screened using visual observations of oil-impacted pond bottom material and PID readings to monitor progress of material removal. Excavation activities will be suspended once all excavation perimeter observations and field screening indicate that pond bottom material containing concentrations of COCs above VAP standards has been removed. The extent of the excavation will be properly documented.

Confirmation sampling and potential excavation step-outs and sampling contingency procedures are described in Sections 8.3.6 and 10.1.1, respectively, of this document. Backfilling and restoration, as described in Section 8.4 will not be completed until pond bottom material sampling/analysis has confirmed that remedial objectives have been achieved. Confirmation sample analysis will be expedited to minimize the amount of time excavations are open.

If the nature of the materials encountered changes significantly from the anticipated condition observed during previous investigations, such materials will be segregated and isolated/covered until additional characterization can be performed to ensure that the material is being handled appropriately.

#### **8.3.5 Transportation and Disposal**

Prior to the commencement of work, the Contractor shall designate the location of the intended landfill for disposal of the waste materials. The selected disposal facility will

be properly licensed to accept the waste, and use of the facility must be approved by CDF before shipment of material. Previous sampling results, including TCLP analysis prior to and during the VAP Phase II, indicates that the impacted bottom material can be disposed as non-hazardous special waste.

Material removed from the site will be hauled by licensed trucks in accordance with applicable federal, state, and local rules and regulations in effect for the transportation of stabilized pond bottom material. Trucks will remain in non-impacted areas during all stages of the work and the transportation contractor will be required to keep the wheels and exterior portions of the trucks free of excessive dirt and debris while on public roadways. Each loaded truck will be covered to reduce the potential of material blowing onto the roadways. If excessive dirt and/or debris are deposited on the roadways as a direct result of the Contractor's operations, the Contractor will be responsible for cleaning the affected areas of the streets in a timely manner.

All material removed from the site will be manifested, with CDF identified as the generator of the waste. Manifests for each truckload leaving the site will be provided in the documentation report.

Each driver will be required to have the manifest signed at the disposal facility to document both the disposal of the load and the quantity of material disposed. The completed manifest will be returned to the environmental representative by noon of the following workday.

**8.3.6 Confirmatory Sampling**

At the completion of each pond bottom material removal activity, samples will be collected to document that the full extent of necessary excavation has been completed. Due to large size of the Pond areas, the number of samples collected will be determined based on a statistical sampling approach, where a sampling grid for each pond will be established based on the following equation:

*medium site*      $\frac{\sqrt{A/\pi}}{4} = GI$

- where:
- A     = area to be grid (ft<sup>2</sup>)
  - GI     = grid interval
  - SF     = Site Factor, length of area to be grid (unitless)

A minimum of nine (9) confirmation samples or 25 percent of the total number of grid points, whichever is larger, will be sampled for verifying pond bottom material removal. Based on the approximate size of Ponds 1 and 2, it is anticipated that a grid interval will be approximately 40-feet with a total of nine (9) sample points randomly selected to verify the remediation. In addition to the random selection method, locations will also be "biased" toward areas that most likely still exceed remedial objectives based on visual observations and PID readings.

Backfilling and restoration, as described in Section 8.4 will not be completed until pond bottom material sampling/analysis has confirmed that remedial objectives have been achieved.

Sampled excavation surface that does not meet the remedial objective (*i.e.*, lab data exceeds the remedial objectives previously defined) will be addressed per the outlined project contingencies described in Section 10.1.1 and will include additional excavation at the direction of the CR.

### 8.3.7 Sampling Procedures

Samples will be collected from exposed pond bottom material surfaces by hand or with a stainless steel trowel (for portions of the excavation that are safely accessible by personnel), or by using the excavator bucket to obtain samples from surfaces proximal to potentially unstable areas. Trowels will be decontaminated between sample sets. Care will be taken to obtain bucket samples from materials that have not touched the bucket surface. The sampler will wear nitrile gloves changed between samples to prevent possible cross-contamination.

Samples will be sealed in an appropriate glass sample jar for the required analysis, placed on ice, preserved as applicable, and delivered to a VAP-certified laboratory for analysis. Each sample will be assigned a unique identification number. Each sample jar will be labeled with the identification number, sampling date, sampling time, and project name. Samples will be transported to a VAP-certified laboratory using chain-of-custody controls and analyzed by the VAP-certified laboratory for:

- TPH-DRO/ORO by U.S. EPA Method SW-846 8015 and U.S. EPA Method SW-846 8015B.
- Acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene,

2-methylnaphthalene, naphthalene, phenanthrene, and pyrene by U.S. EPA Method SW-846 8270C.

— Arsenic by U.S. EPA Method SW-846 6010B.

VAP sampling protocols require the development of a quality assurance/control plan, and references data quality objectives that are consistent with those as outlined in USEPA Guidance for Superfund Sites. For this project, an equipment blank, field blank, and blind duplicate will be collected and submitted with each 20 confirmatory samples submitted for laboratory analysis. Waste characterization samples do not require VAP certification or QA/QC sampling.

#### 8.4 Backfilling/Restoration

Once confirmatory analytical data is received to document the achievement of remedial objectives for a given area, that area will be backfilled per the following pond-specific backfilling plan:

- **Pond 1:** The bottom of Pond 1 will be backfilled to an elevation consistent with the existing top-of-clay grades (*i.e.*, replacement of all excavated existing clay placed during 1997 Pond 1 reconstruction). The clean clay fill material will be imported from a documented clean source pre-approved by CDF. Material shall be free of all deleterious materials including, but not limited to organics, waste, debris, or other foreign or man-made objects. Backfilling will be performed in six-inch maximum lifts that will be compacted to 98 percent of the maximum dry density as determined in accordance with ASTM standard method D698. Clay thickness will be verified by pre- and post-clay placement surveys
- **Pond 2:** The bottom of Pond 2 will be backfilled with an approximate 6-inch layer of bentonite encapsulated aggregate material (*e.g.*, AquaBlok® or equivalent). Thin-layer capping technology is proposed for Pond 2 to provide a low permeability barrier between the pond water in Pond 2 and the ground subsurface (the pond bottom material meeting or exceeding criterion and ground water) beneath Pond 2, while avoiding potential construction issues of installing a traditional clay liner (*i.e.*, unstable underlying pond bottom material) in Pond 2.

If it is deemed that sampling/analysis is required to document the condition of incoming fill, the material shall meet or exceed the site-specific requirements specified in this RAP or VAP commercial/industrial standards if site-specific standards have not been specified.

Backfilling of each area will be performed after a given area achieves applicable standards (*i.e.*, none of the post-remedial samples containing chemicals of concern in excess of the remedial objectives).

## Section 9

# Remedial Activities for Ground Water

---

This section presents the general approach to ensuring that ground water underlying the Property will continue to meet VAP standards at the Points of Compliance (POCs).

As discussed in Section 2.2.2, a supplemental monitoring well (MW-09) identified a ground water recharge area within the western yard of the Property (IA-03). The recharge area radially slopes downgradient toward RRMW-04 to the northeast, toward MW-07 to the north, toward MW-08 to the west, and toward RRMW-02 to the south-southwest. The recharge area appears to be isolated at the near surface within the western yard. It is suspected that the recharge area is influenced by storm water entering roof drains that are not connected to a storm sewer and is not indicative of the natural ground water gradient (north-northeast).

Considering that the ground water gradient is most likely to the north-northeast, and mounding characteristics at MW-09 is surficial and artificial, the current ground water underlying the property meets UPUS at the applicable POC. Although arsenic and TCE were confirmed as exceeding UPUS, ground water meets UPUS at the applicable POC (*i.e.*, the property boundary and the production well intakes) in accordance with OAC 3745-300-07(I). As discussed above, additional ground water characterization is planned to confirm the Uppermost Saturated Zone complies with VAP ground water response requirements. This RAP will be amended if the additional characterization determines that additional remedy is needed.

Based on the lack of COC detections in the on-Property production wells, the Lower Saturated Zone (*i.e.*, the bedrock aquifer) meets UPUS. The following weight-of-evidence discussion is provided to demonstrate that the Lower Saturated Zone will continue to meet UPUS in the future.

- The concentration of TCE and arsenic (the only COCs above UPUS) are only marginally above the applicable standard. If the source is located on or near the Property, then the travel distance in the aquifer would be short and advective flow in the aquifer would tend to keep COCs near the surface, reducing the potential for migration to deeper water bearing zones.
- Though it is interpreted to be in hydraulic communication with the Upper Saturated Zone, the Lower Saturated Zone consists of shale and other lower permeability strata that can limit migration of COCs in this portion of the aquifer.
- The limited lateral migration and absence of TCE in the onsite production wells indicate that the potential for migration to deeper aquifers in the future is low.

## 9.1 Ground Water Response Requirements and Rationale

Currently,

- Ground water at the Property exceeds UPUS for arsenic and TCE at isolated locations; but
- Ground water meets UPUS at the applicable POCs (*i.e.*, the Property boundary and the production well intakes).

Based on the fact that ground water meets VAP standards at the applicable POCs and the Ground Water Response Requirements of OAC-3745-300-10(E)(2) for Critical Resource ground water without an urban setting designation have been satisfied, CDF will implement the following measures so that ground water will continue to meet VAP Standards:

- Institutional Controls as described in Section 5.
- Ground water monitoring as described below in Section 9.2.

## 9.2 Ground Water – Ground Water Monitoring

CDF will perform ground water monitoring to ensure that ground water meets applicable VAP standards at the property boundaries and at the production wells. The proposed ground water monitoring program is described below, and is subject to change as the TCE supplemental investigation is completed. A copy of the final Ground Water Monitoring Program will be included with the OM&M Plan for the Property.

### 9.2.1 Ground Water Monitoring Program

CDF will implement semi-annual ground water monitoring of the Sentinel Well Network (*i.e.*, IA08-MW09 and IA08-MW10), RRMW-01, MW-07, RRMW-04, MW-06, and production wells, and annual monitoring of the entire monitoring well network (Figure 3) for TCE and arsenic to ensure that ground water meets UPUS at applicable POC.

Ground water monitoring tasks will be implemented as follows.

- Static water elevations will be measured from all Property monitoring wells during each event. These data will be used to develop ground water elevation contour maps and determine flow direction.
- Semi-annually (*i.e.*, every six months for a total of two sampling events per calendar year), ground water samples will be collected from the sentinel well network (*i.e.*, IA08-MW09 and IA08-MW-10), RRMW-01, MW-07, RRMW-04, MW-06, and the two production wells. Although TCE degradation products (*e.g.*, *cis*-1,2-Dichloroethene, *trans*-1,2-Dichloroethene, and Vinyl Chloride) do not exceed VAP standards, TCE in ground water does degrade naturally and these constituents will be monitored to

ensure that the property continues to meet applicable standards. Ground water samples will be submitted to an Ohio VAP-certified laboratory for analysis of:

- TCE and degradation products
  - Arsenic
- Annually (*i.e.*, one sampling event per calendar year, ground water samples will be collected from the Property monitoring wells (*i.e.*, MW-01 through MW-10), RRMW-01, RRMW-02, RRMW-04, and the two production wells. Ground water samples will be submitted to an Ohio VAP-certified laboratory for analysis of:
- TCE and degradation products
  - Arsenic
- Ground Water Monitoring Progress Reports, to include the semi-annual ground monitoring analytical data and ground water elevation contour maps, will be compiled annually within 90 days of receiving the final laboratory data from the VAP-certified lab for the final sampling event of the year.

Ground water monitoring will be implemented using the following methodologies:

#### ***Static Water Elevations***

Elevations will be measured at each accessible on-Property monitoring well to establish the static water level elevation and the elevation of the bottom of the well. Water level measurements will be recorded from all wells prior to sampling any of the wells. The bottom elevation of each well will be measured prior to the first time it is sampled.

Water levels will be measured to the nearest 0.01-foot and recorded on the field-sampling sheets. An electric water-level measuring tape will be used to measure the levels. Measurements will be made from the high point (or surveyed location) at the top of the PVC riser for each well.

#### ***Field Equipment Calibration***

Each piece of field equipment used in ground water sampling activities will be calibrated prior to the sampling event. Equipment calibration procedures will be those set forth in the manufacturer's instructions. Pertinent information will be recorded on the field-sampling sheets.

### ***Sentinel / Monitoring Well Water Sampling***

The purpose of well water evacuation is to remove water from the well that is not representative of the ground water within the formation (*i.e.*, static water from inside the well casing prior to proper ground water sampling activities).

In order to monitor ground water stabilization prior to sampling, four indicator parameters (temperature, pH, turbidity and specific conductance) will be measured and recorded during well evacuation. Portable digital or analog equipment will be used to measure these parameters. Sampling will proceed when three successive measurements of the indicator parameters yield results within  $\pm 10$  percent and turbidity is less than 10 Nephelometric Turbidity Units (ntu). These measurements and the amount of water removed from the well will be recorded on the field-sampling sheets.

It is anticipated that low-flow sampling techniques will be used at the Property. Ground water will be pumped at a rate between approximately 100 and 500 milliliters per minute (ml/min) during purging and sampling. The monitoring wells will be pumped until the indicator parameters stabilize for three consecutive 3 to 5-minute measurement periods.

Once indicator parameters have stabilized, then the water-quality flow-through cell will be disconnected (as needed) and a representative ground water sample will be collected directly from the monitoring point. All samples will be collected using pre-cleaned laboratory grade containers, properly chosen for each specific analytical parameter (*e.g.*, pre-preserved, 40-mL glass vials will be used in the collection of samples for TCE (and degradation products) analysis; pre-preserved 500 mL plastic bottles will be used for arsenic).

In general, ground water samples will be collected in such a manner to reduce agitation and ensure that a consistent flow is generated. The speed of sample collection will be controlled to minimize turbulence in the sample, which could cause escape of VOCs and thus give a potential false negative.

### ***Production Well Water Evacuation***

Production wells are continuously in operation, and the water within the production wells is considered representative of the ground water within the formation. The two production wells will not require additional evacuation prior to sampling; a representative ground water sample will be collected directly from the production well sample port. All samples will be collected

using pre-cleaned laboratory grade containers, properly chosen for the each specific analytical parameter (*e.g.*, pre-preserved, 40-mL glass vials will be used in the collection of TCE samples; pre-preserved 500 mL plastic bottles will be used for arsenic).

In general, ground water samples will be collected in such a manner to reduce agitation and ensure a consistent flow is generated. The speed of sample collection will be controlled to minimize turbulence in the sample, which could cause escape of VOCs and thus give a potential false negative.

On occasion, a pumping well will have planned shutdown periods for maintenance and the water may appear to have iron oxide deposits, which may not meet turbidity criteria. However, the presence of the iron oxide deposits is not anticipated to influence the COC analysis. Care will be taken to avoid sampling the production wells during shut down periods.

#### ***Sample Identification and Transport***

Each sample will be labeled in the field. The labels will be sufficiently durable to remain legible even when wet. The cooler containing the samples will be sealed with tape and custody seal signed and dated by a TRC representative. Samples will be shipped to the Ohio VAP certified laboratory via overnight delivery, or will be hand-delivered. Documentation of the condition of samples upon laboratory receipt will be included in the data package.

#### ***Chain-of-Custody***

The objective of chain-of-custody is to ensure that the appropriate people control the samples and that there is no opportunity for tampering.

The chain-of-custody will be initiated by field personnel as part of the sampling, and will be completed by the receiving laboratory. The chain-of-custody will be signed with the date and time of custody release to the laboratory. The chain-of-custody will be placed in a sealed plastic bag on top of the filled cooler (beneath the lid), and the lid will be taped shut with a custody seal(s) in place.

#### ***Investigation-Derived Waste***

All investigation-derived waste (IDW) (*e.g.*, purge water) will be drummed in 55-gallon steel drums and appropriately labeled for subsequent disposal

pending analysis. An approved waste hauler will dispose of the waste at an appropriate disposal location unless the water meets criteria for discharge to the Property's upgraded oil-water separator system.

#### ***Decontamination***

In order to prevent ground water samples from being cross-contaminated at sampling locations, non-disposable sampling equipment will be decontaminated between each sample location.

#### ***Quality Assurance/Quality Control Samples***

One duplicate sample, one rinsate sample, one matrix spike and one matrix spike duplicate sample will be collected for every 20 or fewer ground water project samples collected and submitted to the Ohio-VAP certified laboratory for analysis. The quality samples will be analyzed for TCE and degradation products and arsenic. In addition, one trip blank will accompany every container containing at least one VOC sample. The trip blank will be submitted for VOC analysis.

### **9.3 Field Variances**

Variances from the work plan will be approved by CDF and/or its representative as appropriate prior to any action being taken, except for emergencies (*e.g.*, when an immediate response is required). CDF will be notified if an emergency response is implemented. The field variances will be documented in the Annual Ground Water Monitoring Report prepared for the project.

## Section 10

# Project Contingencies

---

This section presents the contingent activities CDF will perform should the proposed remedies not meet VAP Standards.

### 10.1 Remedial Construction Contingencies

#### 10.1.1 Step-Out Excavations and Reconfirmation Sampling

Any area where a confirmation sampling point exceeds the VAP standards, additional soil will be excavated at the direction of the field representative. The over-excavation will be a minimum of 1 foot laterally and/or 1 foot vertically in the direction of the exceedance, but potentially greater, based on visual, olfactory, PID measurements and judgment of the Construction Representative (CR) for CDF. The lateral limits of the step-out will be defined as the midpoints between the point of exceedance and the nearest points that meet criteria.

Reconfirmation sampling using the same methods described in Sections 7.2.7 and 8.3.6 will be performed to verify that the remediation objective for that area(s) has been achieved.

#### 10.1.2 Dust

Site construction activities may create issues with dust. Most dust would be expected to result from truck traffic traversing a dry/fine particulate surface material across the site and not from airborne contents from the truck trailers, as truck trailers exiting the site will be covered. In the event that wind-blown dust becomes a problem during operations, water or dust suppressants will be applied to on-Property traffic areas.

#### 10.1.3 Odor

Odor will be monitored in accordance with the established site health and safety plan. Odor is anticipated to be a problem only if (1) an excessive quantity of contaminated soil is encountered and exposed at one time, (2) air temperatures become high, or (3) strong wind direction is consistently toward residences on the south side of Southway Street. In the event that odors become a problem, the size of active excavation areas will be decreased and appropriate odor suppressants will be applied to the sides and bottom of the excavation.

#### 10.1.4 Storm Event and Excavation Flooding

In the event that excessive storm events are encountered, temporary soil berms will be constructed around any open excavation to prevent collection and spill-over of runoff into the exposed excavation. If storm water accumulates within the excavation and does not subside within a reasonable time, response measure such as dewatering into tanker trucks or the upgraded oil-water separator will be considered.

#### 10.1.5 Events Arising from Unforeseen Subsurface Conditions

Prior to excavation activities, CDF will contact the OUPS to identify and clear subsurface utilities within the excavation area.

Should any underground storage tanks or other waste-containing structures be encountered within an excavation, the following actions will be taken:

- Securing that area of the excavation to avoid unauthorized access by personnel or their equipment;
- Acquisition of an appropriate emergency response contractor (if required); and
- Notification of authorities (as required).

Should any drains, sewers, or other piping infrastructure be encountered in the excavation, the discharge of fluids to/from the excavation will be blocked by temporarily plugging the exposed line. Following proper identification, sequential excavation of the line will then be accomplished. If the line is not active, the segment will be permanently plugged. If the line is active, it will be redirected and reconnected into the site's infrastructure, as appropriate.

### 10.2 Ground Water Compliance

If COCs exceed standards at sentinel wells or production wells for two consecutive events, CDF will:

- Notify employees of exceedance in production wells;
- Implement interim measures outlined in the OM&M Plan protective of the industrial worker, if applicable;
- Notify the agency within 30 days of final laboratory data receipt of any exceedance in sentinel or production wells and any interim measures taken;
- Determine if this RAP needs an addendum to mitigate COC(s);
- Add addendum to this RAP, if appropriate; and
- Document the exceedance in the annual Ground Water Monitoring Report.

## **Section 11**

# **Operation, Maintenance, and Monitoring Plan (OM&M Plan)**

---

CDF will develop an Operation, Maintenance, and Monitoring Plan (OM&M Plan) to be implemented following the completion of remedial activities and implementation of the proposed institutional controls. The OM&M Plan will be submitted with the VAP NFA Letter and request for a CNS, and will be subject to an Operation and Maintenance (O&M) Agreement with Ohio EPA.

## Section 12

### Public Notice

---

A public notice will be given prior to implementation of the RAP. Public Notice will be completed upon final resolution of VAP eligibility determination. Documentation will be submitted to Ohio EPA to demonstrate that a 30-day public comment period has occurred. At this time, public interest in the VAP Property and the proposed Remedial Activities is low; therefore, CDF does not anticipate the need for a public meeting. Should the level of interest change, then CDF will schedule an open meeting to receive and discuss public comments to the proposed remedies.

## Tables

---

**Table 1**  
**Summary of Planned Remedial Activities**



## Canton Drop Forge (Canton, Ohio)

Table 1: Summary of Planned Remedial Activities

Identified Area		Affected Media	Chemical of Concern	Exposure Pathway	Receptor	Point of Compliance	Type of Remedy
IA-6	Pond 1	Pond Bottom Solids and Associated Soil	TPH-ORO	Direct Contact	Facility Worker	solid materials present in the side walls and bottom of the pond/retention structures	Institutional Control <sup>(1)</sup> Excavation and Disposal
				Construction / Excavation	Construction / Excavation Worker		
				Protection of Pond Water	Facility Worker		
		Pond Water	Free phase used oil present on pond water	Direct Contact	Facility Worker	waters present in the pond/retention structures	
IA-7	Pond 2	Pond Bottom Solids and Associated Soil	TPH-ORO, TPH-DRO  TPH-ORO, TPH-DRO; Arsenic; Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, 2-Methylnaphthalene, Naphthalene, Phenanthrene, Pyrene	Direct Contact	Facility Worker	solid materials present in the side walls and bottom of the pond/retention structures	Institutional Control <sup>(1)</sup> Excavation and Disposal
				Construction / Excavation	Construction / Excavation Worker		
				Protection of Pond Water	Facility Worker		
		Pond Water	Free phase used oil present on pond water	Direct Contact	Facility Worker	waters present in the pond/retention structures	
IA-8	Sitewide Ground Water	Ground Water	Trichloroethene, Arsenic	Ingestion, Showering / Washing	Facility Worker	Property Boundary Production Well Intake	Ground water meets standards at POC. Implement monitoring of sentinal wells to ensure ground water continues to meet VAP standards at the POC.

Notes

TPH: Total Petroleum Hydrocarbons

<sup>(1)</sup> Institutional Control for Soil is Environmental Restrictive Covenant to limit property to industrial (restricted) land use.

**Table 2**  
**Preliminary Remediation Goals**



Canton Drop Forge (Canton, Ohio)

Table 2: Preliminary Remediation Goals

Chemical of Concern	Risk-Based Preliminary Remediation Goals			
	Soil <sup>(1)(2)</sup>	Pond Bottom Materials <sup>(3)</sup>	Pond Water <sup>(3)</sup>	Ground Water <sup>(4)</sup>
	(mg/kg)	(mg/kg)	(ug/L)	(ug/L)
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	56,000	11,000	145,000	950
Acenaphthylene	--	--	--	--
Anthracene	280,000	110,000	445,000	4,700
Benzo(a)anthracene	76	12.0	15	0.63
Benzo(a)pyrene	7.7	2.3	1.1	0.20
Benzo(b)fluoranthene	77	23	19	0.46
Benzo(g,h,i)perylene	--	--	--	--
Benzo(k)fluoranthene	770	1,100	110	22
Chrysene	7,600	1,200	1,300	63
Dibenz(a,h)anthracene	7.7	4.8	0.86	--
Fluoranthene	37,000	9,600	28,000	420
Fluorene	37,000	1,600	76,000	630
Indeno(1,2,3-cd)pyrene	77	130	7.9	0.34
2-Methylnaphthalene	--	340	820	1,100
Naphthalene	150	1,000	4,800	67
Phenanthrene	--	--	--	--
Pyrene	28,000,000	26,000	32,000	470
Inorganic Compounds				
Arsenic	--	180	1,000	10
Total Petroleum Hydrocarbons <sup>(5)</sup>				
TPH-GRO	5,000	5,000	--	--
TPH-DRO	10,000	10,000	--	--
TPH-ORO	20,000	20,000	--	--

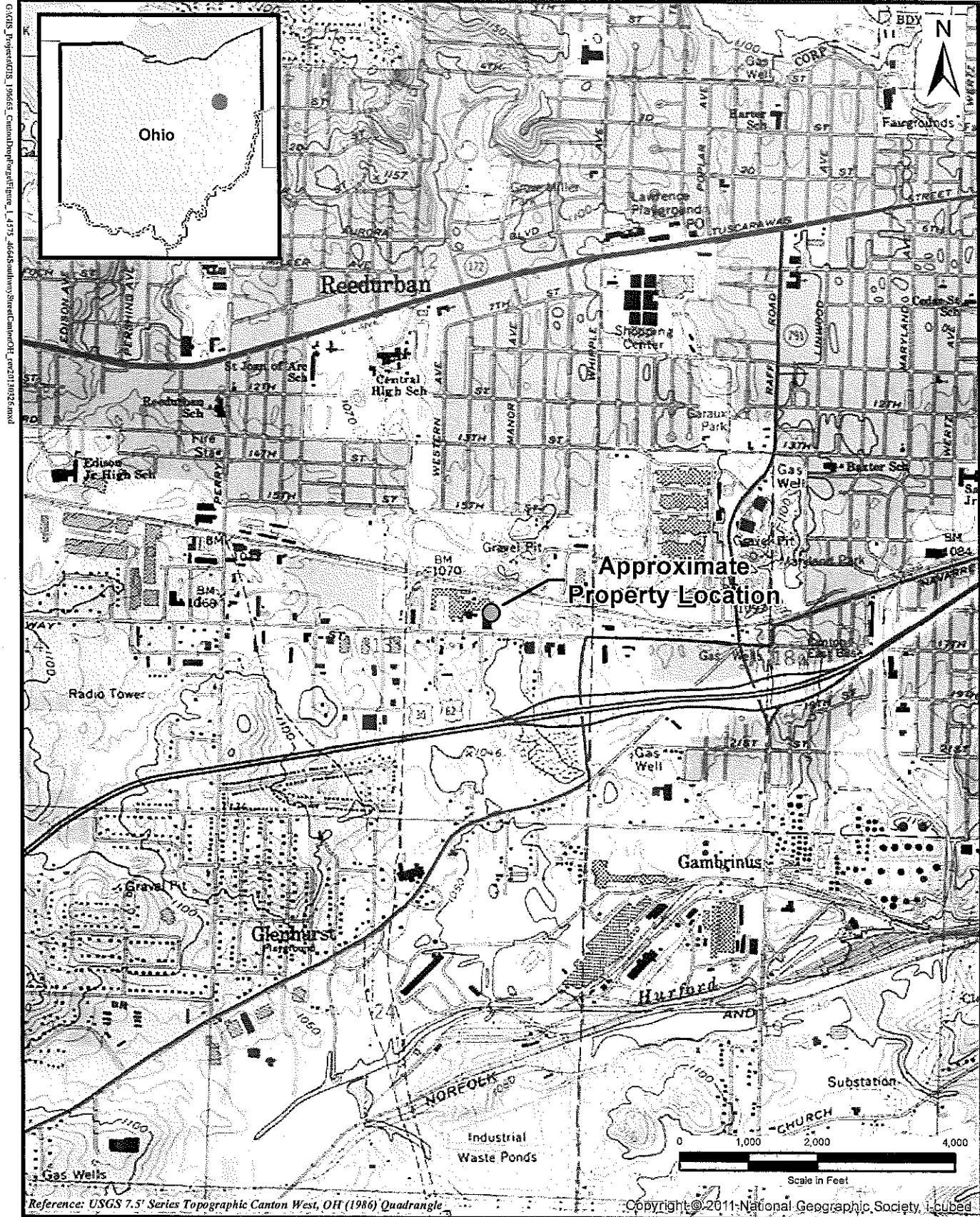
Notes

- <sup>(1)</sup> Fine-grained soil type assumed for determining conservative standard for screening purposes.
- <sup>(2)</sup> Direct Contact Soil Standards for Commercial/Industrial Land Use or Excavation/Construction activities (whichever is lower). (OAC 3745-300-08).
- <sup>(3)</sup> Standards for Pond Bottom Materials and Pond Water from Table 8-21 of VAP Phase II report.
- <sup>(4)</sup> Generic Unrestricted Potable Use Standards (UPUS), based on MCLs where available, or risk-derived. (OAC 3745-300-8).
- <sup>(5)</sup> TPH-GRO: TPH (C6 - C10); TPH-GRO: TPH (C10-C20); TPH-ORO: TPH (C20 - C30)

## Figures


---

**Figure 1**  
**Property Location Map**



Reference: USGS 7.5' Series Topographic Canton West, OH (1986) Quadrangle

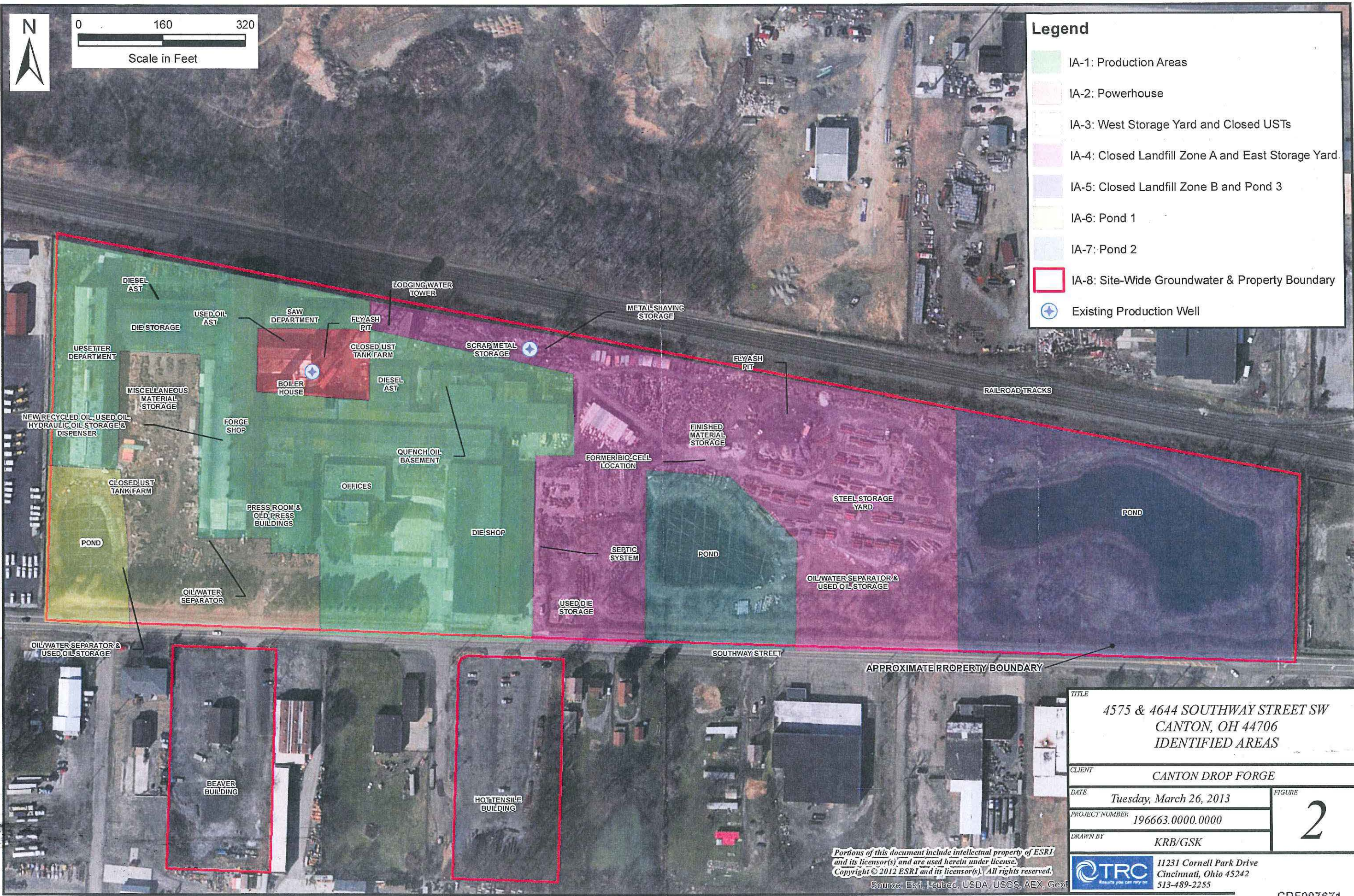
Copyright © 2011 National Geographic Society, Inc.

DRAWN BY <b>JMJ/GSK</b>		PROJECT NO. <b>196663.0000.0000</b>	DATE <b>March 2013</b>	TITLE <b>Property Location</b>
CLIENT <b>CANTON DROP FORGE</b>		<b>4575 &amp; 4644 Southway Street SW</b>		<b>Canton, OH 44706</b>
 <b>11231 Cornell Park Drive</b> <b>Cincinnati, Ohio 45242</b> <b>513-489-2255</b> <a href="http://www.trcsolutions.com/">http://www.trcsolutions.com/</a>		Data Copyright © 2012, TRC Environmental, Inc. This map does not represent a legal document. It is intended to serve as an aid in graphical representation only. Information shown on this map is not warranted for accuracy or fitness for any particular purpose.		FIGURE <b>1</b>

**Figure 2**  
**Identified Areas**

GA: 6726\_Proposed EIR\_196663\_Canton Drop Forge Figure 2 Jan 15/13\_1064Southway Street Canton OH Jan 30 2013.mxd

This map does not represent a legal document. It is intended to serve as an aid in graphical representation only.  
Data Copyright © 2012, TRC Environmental Inc.



**Legend**

- IA-1: Production Areas
- IA-2: Powerhouse
- IA-3: West Storage Yard and Closed USTs
- IA-4: Closed Landfill Zone A and East Storage Yard
- IA-5: Closed Landfill Zone B and Pond 3
- IA-6: Pond 1
- IA-7: Pond 2
- IA-8: Site-Wide Groundwater & Property Boundary
- Existing Production Well

TITLE 4575 & 4644 SOUTHWAY STREET SW CANTON, OH 44706 IDENTIFIED AREAS	
CLIENT CANTON DROP FORGE	
DATE Tuesday, March 26, 2013	FIGURE <b>2</b>
PROJECT NUMBER 196663.0000.0000	
DRAWN BY KRB/GSK	

Portions of this document include intellectual property of ESRI and its licensor(s) and are used herein under license.  
Copyright © 2012 ESRI and its licensor(s). All rights reserved.  
Source: Esri, Imagery, USDA, USGS, AEX, Geo

**TRC** 11231 Cornell Park Drive  
Cincinnati, Ohio 45242  
513-489-2255

Figure 3

Summary of Planned Remedial Activities

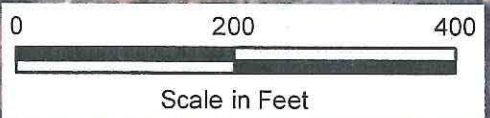
G:\GIS\Projects\GIS\_196663\_CentralDropForge\Figure\_3\_4575\_4644SouthwayStreet\CentralDropForge\_20130326.mxd

This map does not represent a legal document. It is intended to serve as an aid in graphical representation only.  
Data Copyright © 2012, TRC Environmental Inc.



# Legend

- Sentinel Well Network
- Closed Landfill



TITLE 4575 & 4644 Southway Street SW Canton, OH 44706 Summary of Planned Remedial Activities		
CLIENT	CANTON DROP FORGE	
DATE	Tuesday, March-26, 2013	FIGURE <b>3</b>
PROJECT NUMBER	196663.0000.0000	
DRAWN BY	KRB/GSK	

Portions of this document include intellectual property of ESRI and its licensor(s) and are used herein under license.  
Copyright © 2012 ESRI and its licensor(s). All rights reserved.

Source: Esri, Intermap, USDA, USGS, AEX, GeoE



11231 Cornell Park Drive  
Cincinnati, Ohio 45247  
513-489-2255

Figure 4

Pond 1 Remediation Details



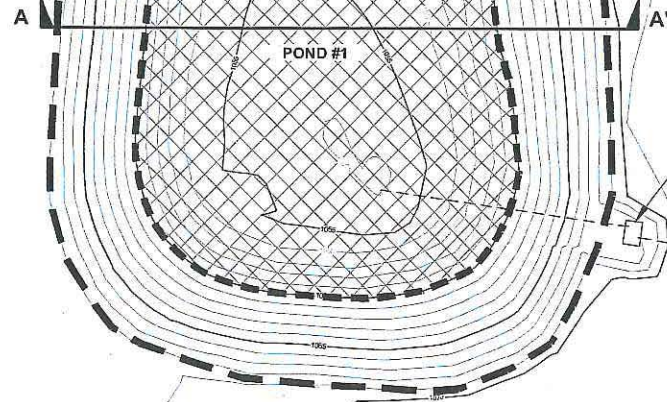


EXISTING STORMWATER OUTFALL  
(RESTORE RIPRAP AT OUTFALL FOR  
EROSION PROTECTION)

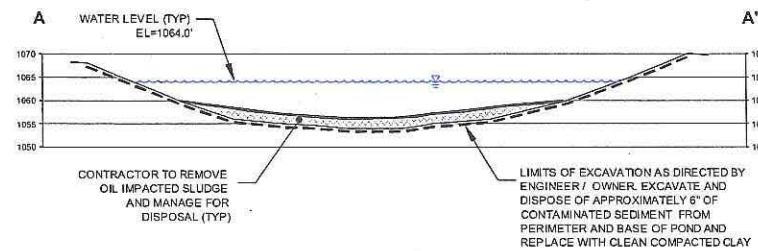
PROPOSED STORMWATER OUTFALL  
(DEPTH TO BE DETERMINED)  
INSTALL RIPRAP FOR EROSION  
PROTECTION

APPROXIMATE LIMITS OF 6"  
THICK SEDIMENT REMOVAL,  
RESTORE PER DETAIL

APPROXIMATE LIMITS OF SLUDGE  
REMOVAL (SLUDGE APPROXIMATELY  
2 FOOT THICK AT BASE OF POND)



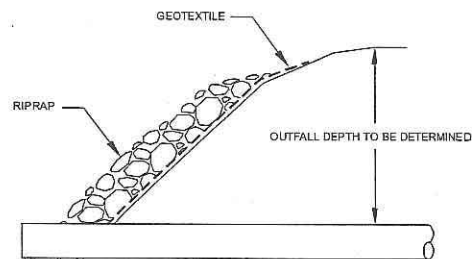
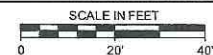
POND 1 - PLAN VIEW



POND 1 - PROFILE VIEW

1  
4

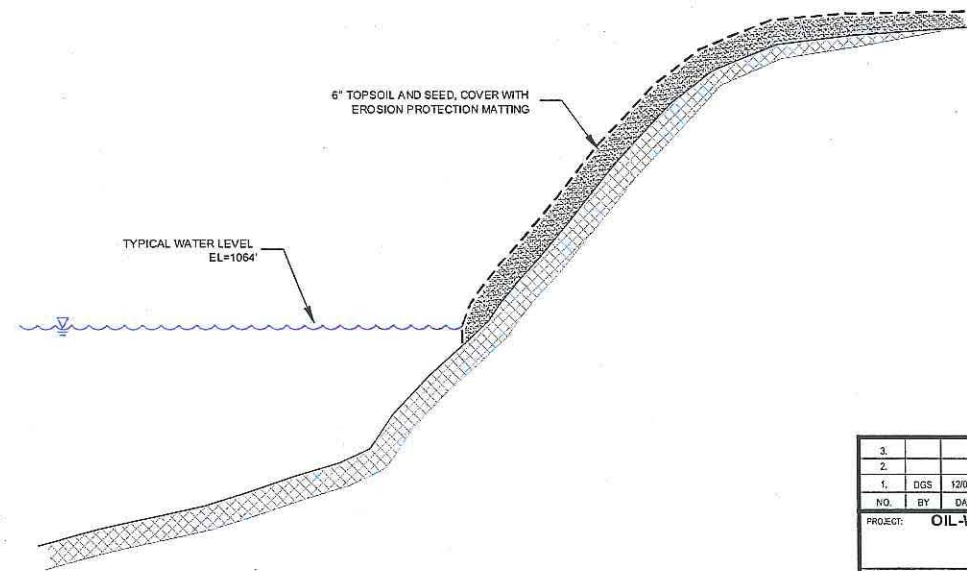
POND 1 REMEDIATION DETAILS



2  
6

OUTFALL DETAIL

SCALE: NTS



3  
-

POND SIDESLOPE RESTORATION DETAIL

SCALE: NTS

3.					
2.					
1.	DGS	12/08/12	ISSUED FOR BIDDING PURPOSES		DM
NO.	BY	DATE	REVISION		APPD.
PROJECT: OIL-WATER SEPARATION IMPROVEMENTS CANTON DROP FORGE CANTON, OHIO					
TITLE: POND 1 REMEDIATION DETAILS					
DRAWN BY:	DGS	SCALE:	AS INDICATED	PROJ. NO.	197280.0000
CHECKED BY:	DM	DATE PRINTED:		FILE NO.	100003.0004.4-S.dwg
APPROVED BY:	DM	DATE:	APRIL 2013	FIGURE 4	



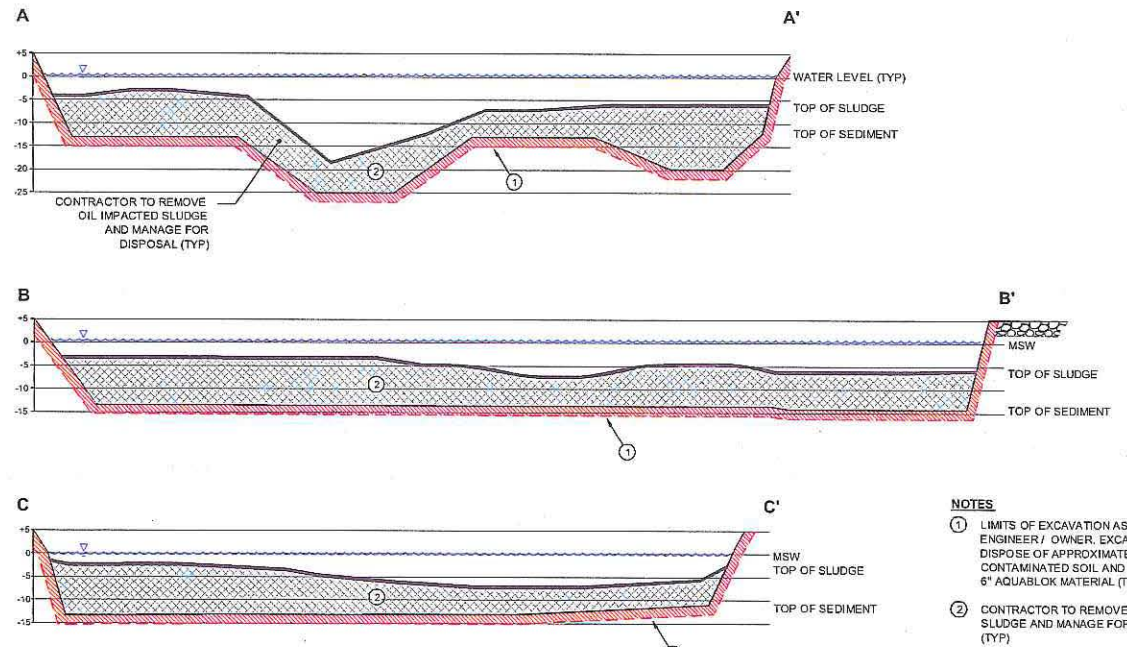
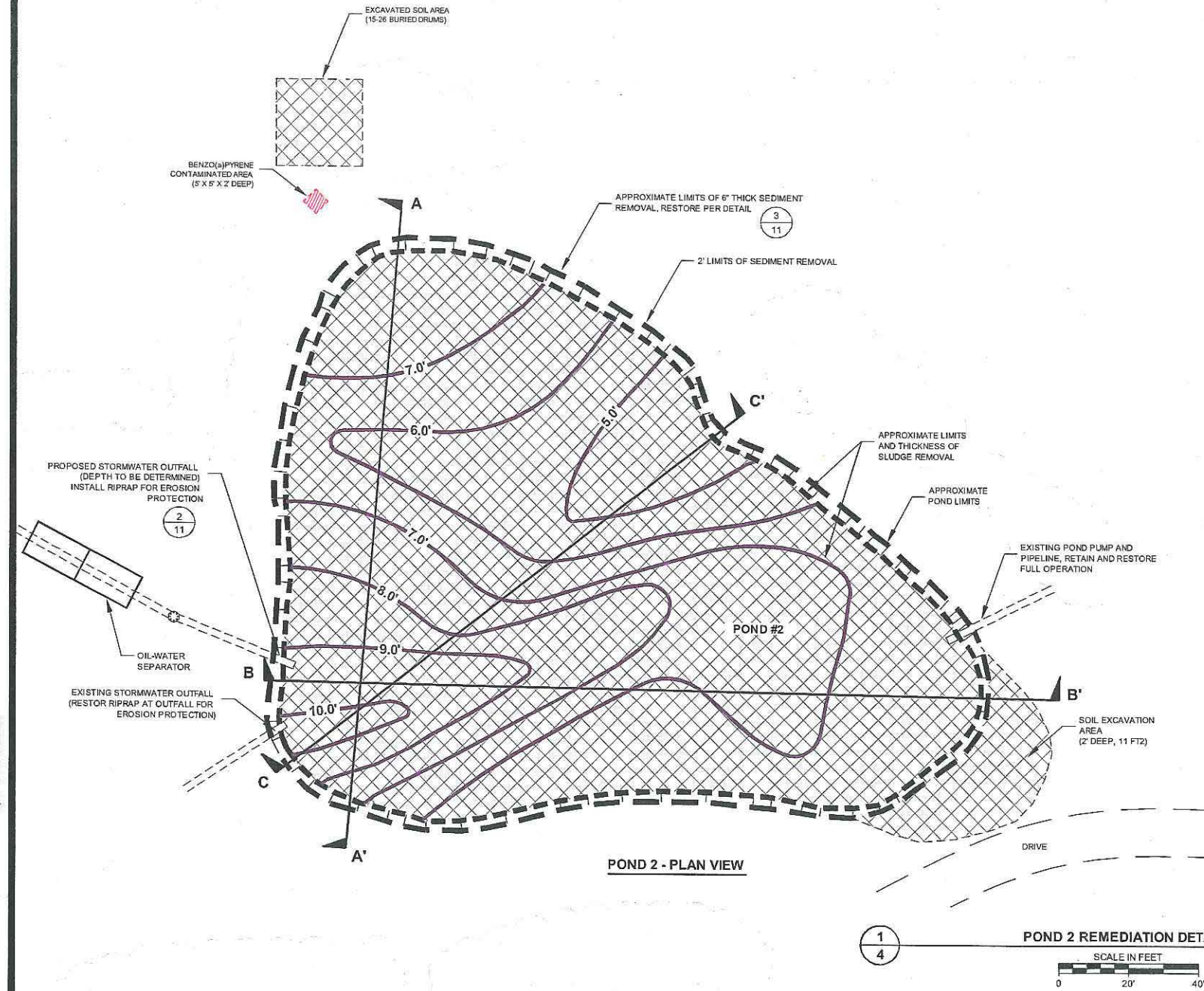
1540 Eisenhower Place  
Ann Arbor, MI 48108  
Phone: 734.971.7080  
Fax: 734.971.9022

Figure 5

Pond 2 Remediation Details

LEGEND  
7.0' OIL-IMPACTED SLUDGE THICKNESS (APPROXIMATE)

NOTES  
1. DASHED LINES ARE INFERRED.  
2. DEPTH TO BOTTOM OF POND 2 IS UNKNOWN.



NOTES  
1. LIMITS OF EXCAVATION AS DIRECTED BY ENGINEER / OWNER. EXCAVATE AND DISPOSE OF APPROXIMATELY 2' OF CONTAMINATED SOIL AND REPLACE WITH 6" AQUABLOK MATERIAL (TYP).  
2. CONTRACTOR TO REMOVE OIL IMPACTED SLUDGE AND MANAGE FOR DISPOSAL (TYP).

NOTES:  
1. SURFACES AND POND BASE TOPOGRAPHIC DATA NOT AVAILABLE.

3.				
2.				
1.	DGS	12/09/12	ISSUED FOR BIDDING PURPOSES	DM
NO.	BY	DATE	REVISION	APPD.
PROJECT: OIL-WATER SEPARATION IMPROVEMENTS CANTON DROP FORGE CANTON, OHIO				
TITLE: POND 2 REMEDIATION DETAILS				
DRAWN BY: STENLED		SCALE:		PROJ. NO. 107280.0000
CHECKED BY: DM		AS INDICATED		FILE NO. 100003.0004-4-5.dwg
APPROVED BY: DM		DATE PRINTED:		FIGURE 5
DATE: APRIL 2013				
		1540 Eisenhower Place Ann Arbor, MI 48106 Phone: 734.971.7080 Fax: 734.971.9022		

**Appendix A**  
**Ohio EPA / RCRA MOA Form #16 – Remedial**  
**Action Work Plan**

---

Ohio EPA RCRA AND VAP MOA Track: Remedial Action Work Plan

Required Information Component of the Remedial Action Work Plan	Yes or No (choose one)	Provide response below. Please reference the location [including document name, section and page number(s)] within the Phase II documentation where this information or evaluation is located and also answer any specific questions as indicated.
1. General Information About Remedial Activities:		
1a. Specify the type of remedy or remedial activities that will be employed.		(Check all that apply) <input checked="" type="checkbox"/> Institutional Control(s) <input checked="" type="checkbox"/> Engineering Control(s) <input checked="" type="checkbox"/> Other Remedy(ies) - please specify: Excavation and Disposal Ground Water Monitoring Supplemental Phase II activities
1b. Summarize planned remedial activities by completing a table with the following information (see Attachment 1): <ul style="list-style-type: none"><li>The Identified area where the remedy will be employed</li><li>Affected media to be addressed by the remedy</li><li>Pathways and/or potential receptors addressed</li><li>Applicable points of compliance</li><li>Type of remedy including a brief description of the remedy (e.g., commercial land use restriction, excavation of soil, containment/ remediation of ground water by pumping and treating, etc.)</li><li>Whether the remedy will be completed prior to issuance of the NFA Letter</li><li>Whether interim measures are necessary</li><li>Whether an O&amp;M Plan is necessary</li></ul> NOTE: If the remedy will not be completed prior to issuance of the NFA Letter, an O&M Plan is necessary. Refer to Form 17 for guidance on the content of an Operation and Maintenance Plan.		
2. Description of Remedial Activities:		
2a. Will all remedial activities be completed prior to issuance of the NFA Letter for the property? Indicate in the column to the right where in the work plan this information is located.	Yes	Section: Section 3.4 Page Number: 3-5
2b. Identify the section of the work plan where a schedule for completion of the remedial activities is located.		Section: Section 3.4 / Appendix B Page Number: 3-5 / Appendix B
2c. Identify the section of the work plan that details how remedial activities competed prior to issuance of the NFA Letter will be confirmed to verify that the remedial activities comply with applicable standards.		Section: Section 7.2.7 / Section 8.3.6 Page Number: 7-4 / 8-4

Ohio EPA RCRA AND VAP MOA Track: Remedial Action Work Plan		
Required Information Component of the Remedial Action Work Plan	Yes or No (choose one)	Provide response below. Please reference the location [including document name, section and page number(s)] within the Phase II documentation where this information or evaluation is located and also answer any specific questions as indicated.
Note: The work plan must provide for the submittal of appropriate documentation to Ohio EPA to confirm that the remedial activities result in the property complying with applicable standards. This documentation must be included in an addendum to the Phase II report and submitted to Ohio EPA as part of the NFA Letter. The documentation is subject to Ohio EPA review and approval.		
2d. Identify the section of the work plan that defines the remedy to be used for each identified area of the property.		Section: Section 3.3 Page Number: 3-4
2e. Identify the COCs in each affected media that exceed applicable standards. Indicate in the column to the right where in the work plan this information is located.		Section: Section 2.5 Page Number: 2-11
2f. Note the section in the work plan that describes how remedial activities will be used to comply with applicable standards.		Section: Section 3.2 Page Number: 3-2
2g. Does the ground water contain COCs in excess of unrestricted potable use standards?  If YES, provide the section in the work plan that discusses how the volunteer will comply with ground water response requirements.	Yes	Section: Section 9.1 Page Number: 9-2
2h. If YES to Question 2g, are the ground water response requirements contained in paragraphs (E)(2)(a)(v), (E)(2)(c)(vi), (E)(3)(a)(v), and (E)(3)(c)(vi) of OAC 3745-300-10 applicable to the property?  If YES, the work plan must detail how the response requirements will be met, including those activities that must be completed prior to issuance of the NFA Letter.	No	Section: NA Page Number: NA
2i. Will a use restriction (i.e. environmental covenant) meeting the requirements of ORC 5301.82 be used to demonstrate compliance with applicable standards? Indicate in the column to the right where in the work plan this information is located.  If YES, do not record the environmental covenant. A copy of the proposed environmental covenant must be submitted to Ohio EPA for prior review by Ohio EPA's legal office. A copy of the proposed environmental covenant must be attached to this form.	Yes	Section: Section 5 Page Number: 5-1
2j. Do the planned remedial activities require operation and maintenance or will the remedial activities be incomplete at the time of issuance of the NFA Letter? Indicate in the column to the right where in the work plan this information is located.  If YES, an O&M Plan is required. Attach a copy of the	Yes	Section: Section 11 Page Number: 11-1

Ohio EPA RCRA AND VAP MOA Track: Remedial Action Work Plan		
Required Information Component of the Remedial Action Work Plan	Yes or No (choose one)	Provide response below. Please reference the location [including document name, section and page number(s)] within the Phase II documentation where this information or evaluation is located and also answer any specific questions as indicated.
completed O&M Plan to the Remedial Action Work Plan. See Form 17 for guidance on the content of an O&M plan. Note that compliance with applicable standards must be achieved within five years or another time frame agreed to by the director.		
<p>2k. Are interim measures necessary to protect public health and safety and the environment prior to implementation of the final remedy or do interim measures need to be incorporated into the final remedy during maintenance or repair of the final remedy? Indicate in the column to the right where in the work plan this information is located.</p> <p>If YES, go to Question 3.</p> <p>If NO, go to Question 4.</p>	No	<p>Section: Section 4</p> <p>Page Number: 4-1</p>
<b>3. Description of Interim Measures:</b>		
<p>3a. Will risk mitigation measures be used to mitigate exposure during construction or excavation activities?</p> <p>If YES, a "Risk Mitigation Plan" is necessary. Indicate in the column to the right where in the work plan this information is located. Ohio EPA may be contacted for guidance on the content of a Risk Mitigation Plan.</p>		Not Applicable
<p>3b. Will interim measures be used during implementation of or repair of the final remedy, or both?</p> <p>If YES, indicate in the column to the right where in the work plan this information is located.</p>		Not Applicable
<p>3c. Indicate where in the work plan the exposure pathways, affected media and receptors being addressed by the Interim measures are described.</p>		Not Applicable
<p>3d. Indicate where in the work plan it is describe how the interim measures will ensure protectiveness.</p>		Not Applicable
<b>4. Public Notice:</b>		
<p>4a. Has the Public Notice of the volunteer's submission of the Remedial Action Work Plan been issued?</p> <p>If YES, a copy of the Public Notice must be attached to this form.</p> <p>Note: The Public Notice must be issued upon submittal of the Remedial Action Work Plan, to allow for public</p>	No	<p>Section: Section 12 / Appendix C</p> <p>Page Number: 12-1 / Appendix C</p> <p>Public Notice to be completed upon final resolution of VAP eligibility determination.</p>

## Ohio EPA RCRA AND VAP MOA Track: Remedial Action Work Plan

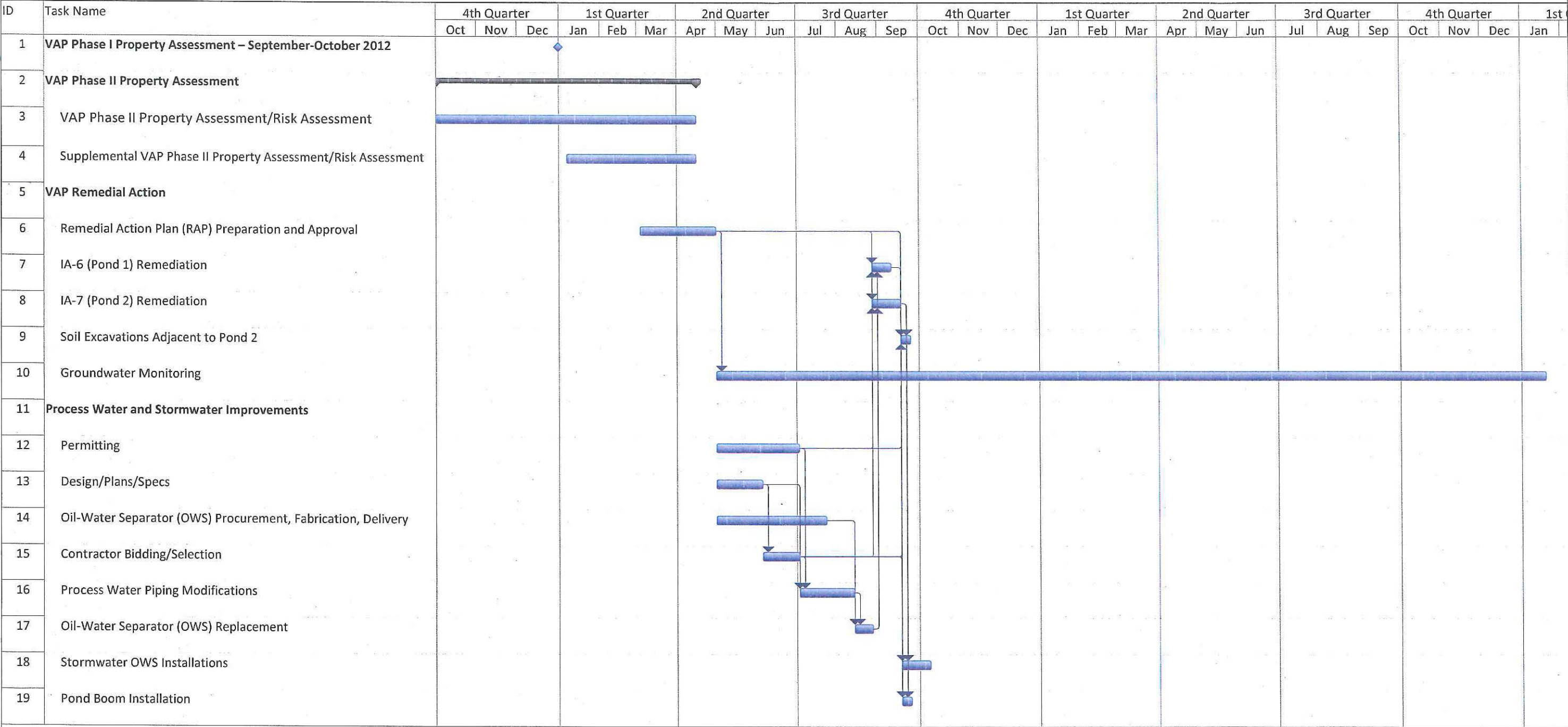
Required Information Component of the Remedial Action Work Plan	Yes or No (choose one)	Provide response below. Please reference the location [including document name, section and page number(s)] within the Phase II documentation where this information or evaluation is located and also answer any specific questions as indicated.
comment prior to Ohio EPA's approval of the work plan.		
<b>4b.</b> Has documentation been submitted to verify the public notice was published by a "local newspaper"?  Note: Proof of publication must be submitted to Ohio EPA prior to Ohio EPA's approval of the work plan to demonstrate that a 30-day comment period has occurred.	No	Section: Section 12 Page Number: 12-1  <i>Public Notice to be completed upon final resolution of VAP eligibility determination.</i>
<b>4c.</b> Is the volunteer aware of any public interest in the property?	No	At this time, CDF is not aware of any public interest in the VAP Property and the proposed Remedial Activities.
<b>4d.</b> Has the volunteer scheduled a public meeting regarding this project?  Note: An Ohio EPA representative needs to attend any public meeting addressing the Remedial Action Work Plan or other RCRA AND VAP MOA matters.	No	At this time, public interest in the VAP Property and the proposed Remedial Activities is low; therefore, CDF does not anticipate the need for a public meeting. Should the level of interest change, then CDF will schedule an open meeting to receive and discuss public comments to the proposed remedies.
<b>4e.</b> Has the volunteer held a public meeting regarding this project?  If YES, a summary of the topics raised by the public at the public meeting must be attached to this form.	No	
END OF FORM #16		

## Appendix B

### Project Schedule

---

Canton Drop Forge  
Remedial Action Project Schedule



Project: CDF RA Schedule  
Date: Mon 4/29/13

Milestone ◆ Summary — Task —

## Appendix C

### Public Notice

---

Public Notice to be completed upon final resolution of VAP eligibility determination.